

CASE STUDY

Alert Innovation Alphabot®,
Automated Grocery Management
Technology for Walmart

Powered by Axiomtek



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Senior Director of Electrical
Engineering and Controls
Alert Innovation*

Background

The retail industry has evolved tremendously over the years, especially within the past decade. Advancements in technology have created new phenomena from flourishing e-commerce and multi-channel retailing to today's



buzzword "omnichannel retailing." They have created many new possibilities for better customer engagement, consistent shopping experience and enhanced shopper's convenience — which have led to increased brand loyalty and, ultimately, gained market share. Automation technology has also become a competitive advantage. It enhances processes, operations, supply chain management and logistics. It also provides higher level of efficiency in all key areas in support of a retailer's success.

Robotics technology is being used to help enhance e-commerce businesses and overcome past limitations. Areas such as inventory management, fulfillment and customer service are being rethought and reinvented through these new capabilities. The use of these advanced technologies now has expanded beyond factory production line to include warehouse robotics, automated inventory control systems and smart retailing for most consumer-based businesses including clothing and grocery stores. Grocery shopping experience takes on a new meaning with many more ways to shop. The end results are more options, greater convenience and time efficiency.



From Brick and Mortar Retailers to Omnichannel Big-Box Stores



The leading retailers who understand the changing retail landscape and are able to adapt will remain relevant and competitive. The omnichannel retailing phenomenon has pitched brick-and-mortar stores against online shops such as eBay and Amazon; retailers against wholesalers such as Costco and Sam's Club; and all-in-one superstores such as Walmart and Target against grocery chains like Whole Foods Market. The businesses that are willing to let go of traditional practices and shape their mindsets with new visions are most likely investing in new technologies that can bridge the gap and provide better results.

Companies that fail to adapt to the industry changes most likely will not survive the race, no matter how prominent they were in the past. We have seen recent examples of Toys“R”Us' liquidation and Sears' ongoing public struggles.

Demand for Faster and More Convenient Way to Grocery Shop

Per Supermarket News' survey of 1,000 US adults in 2018, the growing trend is online grocery shopping, and it is here to stay. According to their study, online shoppers are more time-sensitive than cost-sensitive. A growing percentage of all consumers stated that they don't have much time to plan or do their shopping. Consumers are demanding for more ways to shop. Online shopping has become the key growth area for the market.

Alert Innovation, Inc.: Bringing Transformative Innovation to the Food Retail Industry

In 1994, John Lert, Alert Innovation's Chief Executive Officer and a leading visionary in the industry, founded Alert Corporation which later became Alert Innovation, Inc. He invented the Alphabot System to help create the "perfect" supermarket that would transform the industry and the way consumers shop. Joining John Lert was Bill Fosnight, his co-inventor and business partner. Together they built their team with a highly experienced engineering staff and made the vision a reality in 2016.

Alert's focus was on using robotic technology to enhance customers' convenience with no waiting in checkout lines, saving their time in the store and offering them options that include multiple shopping channels to ensure their best and consistent shopping experiences. He also delivered greater operational efficiency to the store and enhanced their bottom line with the Alphabot System.

Walmart's Quest to Gain an Edge in the Industry with Their Game-Changing Technologies

Based on Walmart's news and press releases on the topic of innovation including "Top Ways Walmart is Changing How Customers Shop," January 15, 2019¹, Walmart is investing in new retail technologies to connect all sales channels and deliver their promise of "Making shopping and working at Walmart easier for customers and associates alike." They have invested in technologies such as those that have been used to deliver items in less than a minute at their in-store Pickup Towers; provide virtual reality for their associates' training; offer Check Out With Me for easy and no-wait checkout; showcase Smart Life - intelligent electronics in-store demonstrations; and support an advanced call-for-help button that triggers wearable GPS-enabled devices worn by their trained personnel to quickly respond when a customer pushes the button.



Walmart continues to revolutionize the industry by deploying pilot programs of many new technologies that save time, provide higher efficiency and result in cost savings. According to the article titled "Custom Autonomous Cargo Vans to

Deliver Groceries in Walmart's Pilot with Udelv"² written by Tom Ward, Senior Vice President of Digital Operations at Walmart, they have been "working hard to bring grocery pickup and delivery to more and more customers across the country – and continue to explore new ways that can make what's easy today even easier tomorrow."

Walmart's Online Grocery System Management

Walmart was in need of an advanced automation solution that could help make their increasingly popular online grocery pickup service more efficient. They needed a system that could manage high volume picking and fulfillment of a variety of grocery and personal items - both perishable and non-perishable - at their Supercenter locations. They were in search of an automation solution and found the Alhabot System concept to be the answer to their problems.

Alert Innovation: Walmart's Solutions for Effective Online Grocery Service Management

Alert Innovation and its invention, the Alhabot System, would help Walmart achieve their mission of "helping people save money and live better"³ by making grocery shopping cost-effective and as easy and convenient as driving through a fast food restaurant. The Alhabot system is designed to be the most efficient Automated Storage and Retrieval System (ASRS) and Automated Each Picking System (AEPS). It is highly scalable and "capital-efficient." The Alhabot's patented robotic fleet is used to accomplish tasks through a single Master Control System (MCS). It offers vertical-drive mechanisms that allow the robots to travel vertically as well as horizontally, resulting in a space-saving structure and a more efficient material handling process.

Making Vision a Reality

The Alhabot is highly flexible. It offers high level of operational efficiency within a space-constraint environment. The robots can handle different product weights and sizes, and maneuver grocery items from the delivery dock to storage as well as through picking and packing process. It can effectively travel through frozen and chilled storage areas and transfer seamlessly to ambient environments. In addition, the system is fast and highly reliable with no chance of complete system failure.

Alert needed computer hardware that would allow them to meet all of the requirements cost-effectively and in a timely manner – along with great engineering support to help them meet their technical challenges.



Key Hardware Requirements



- Must pass the rigorous evaluation process that weighed factors such as quality, support, performance, interfaces offered, scalability, cost, ease of use and ruggedness.
- The Alhabot requires high processing power, memory and storage.
- Must be cost-effective and offer true values.
- Must offer a comprehensive product line that allows for future upgrades.
- Must offer high level of personalized account and engineering support.
- Must provide assistance with board support package software and carrier integration support.
- Must have low profile for a space-constraint application.
- Must add conformal coatings to the product to prevent moisture damage from condensation as the Alhabot travels through the different temperature zones.
- Must integrate application-specific interfaces.
- Must be timely and allow for quick deployment.

Axiomtek's Solutions

“For us, engineering and account support were among our top considerations and the Axiomtek team’s attentive customer service has been critical to our success. Their engineering and R&D teams offer expertise and support to help us overcome our challenges and realize our goals.”

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The Axiomtek team responsible for the account support is **Axiomtek Systems**, the company’s Eastern regional headquarters in Methuen, Massachusetts. The team offered Alert its personalized sales approach, ready-to-assist local resources, access to the global R&D team and unique expertise in design engineering, value-added and customization services. Axiomtek Systems’ specialties are proven to provide great value to Alert Innovation and have been the major success factor for Alert’s selection of Axiomtek as their key strategic hardware supplier.



Axiomtek’s SMARC system on module met all of Alert’s demanding criteria. It fits well in Walmart’s space-constraint application. It also offers the features, the quality and the performance required by Alert Innovation’s stringent project matrix. The required customization work that included conformal coating and other application-specific interfaces were supported by both Axiomtek Systems’ local and the company’s global R&D team. It was done in a timely manner to help Alert meet their timeline. The combination of all of these factors allowed Alert Innovation to deploy their Walmart’s solutions quickly and successfully.

Why Axiomtek

“Axiomtek has been our leading embedded computing supplier from day one,” said Matthew Coady, Senior Director of Electrical Engineering and Controls. “We chose them because their products and team consistently met our stringent project requirements, delivering quality, performance, support and all the features our applications required. The SMARC SOM that we selected fits in our space-constrained application and helped us come to market quickly. If (and when) our application needs more processing power, memory or storage, Axiomtek has a range of products in their portfolio and roadmap that will help keep our hardware platform viable for many years to come. Axiomtek was quick to provide us with a BSP for our QNX operating system, and carrier integration support. For us, engineering and account support were among our top considerations and the Axiomtek team’s attentive customer service has been critical to our success. Their engineering and R&D teams offer expertise and support to help us overcome our challenges and realize our goals.”

Future Plans

Axiomtek values its customer's trust and partnership – and will continue to support Alert Innovation on their quest to be the leader in their market. Axiomtek and Alert Innovation plan to collaborate and create more synergies through the two companies' strengths to expand the Walmart's Alphabot system deployment throughout the world. Axiomtek is committed to supporting Alert Innovation on their other future ground-breaking ventures.

The Alphabot is now in its beta test phase and has been operating in Walmart Supercenter in Salem, New Hampshire.

1. Source: news.walmart.com
2. Source: news.walmart.com
3. From "About Walmart" at news.walmart.com

About Axiomtek

Axiomtek is a design and manufacturing company of PC-based industrial solutions and value-added services for a variety of industries. Axiomtek's high quality products include industrial PCs, single board computers, fanless and rugged embedded systems, EtherCAT Master Controllers, IoT gateway devices, and many more.

The Axiomtek USA headquarters is located in City of Industry, CA. The subsidiary incorporates product integration and logistics, as well as a wide range of service offerings including design assistance. Axiomtek Systems in Methuen, MA, is the subsidiary's Eastern Headquarters. It adds high level of expertise including COTS integration and a variety of value-added services to the Axiomtek USA comprehensive suite of capabilities.

To learn more about Axiomtek visit us at us.axiomtek.com, email us at solutions@axiomtek.com or call at 1-888-GO-AXIOM (1-888-462-9466).

About Alert Innovation

Alert Innovation uses innovative technology to provide game-changing, material-handling automation solutions to the retail/grocery industry. An inventor and an entrepreneur, John Lert, began working on the concept of a "perfect" supermarket in 1994. In 2013, Alert Corporation, later renamed Alert Innovation, Inc. was founded with the partnership with his co-inventor Bill Fosnight. The team secured start-up funding in 2016, and the Alphabot is now a reality.

The Alert team comprises of engineers and team members who came from world's leading technology institutions and robotic companies. This highly experienced and passionate group is committed to John Lert's vision and are driven to improve people's lives through innovation.

To learn more about Alert Innovation and its technological solutions, visit alertinnovation.com.