

Ryder Smart Warehouses Transform the Digital Supply Chain

The groundwork for the warehouse of the future is in place. Powered by the digital supply chain, tomorrow's warehouse relies on a strategic mix of innovative technology to deliver end-to-end execution, control, and agility. Most importantly, the innovation of the smart warehouse paired with advanced vehicle technology will empower your digital supply chain to be a source of real-time data that allows you to continually improve your efficiency and improve speed-to-market.

The "now economy" and rising consumer expectations of near-immediate delivery through e-commerce channels continue to disrupt supply chains. This disruption is causing executives to employ new technology based on faster fulfillment and better order accuracy to meet rising customer expectations. According to the 2017 MHI Annual Industry Report, 92 percent of respondents believe at least one of nine major technologies can transform supply chains and position their companies to meet customer needs over the next 10 years. These technologies include robotics, predictive analytics, drones, autonomous vehicles, sensors, wearables, voice-controlled technology, cloud computing, and 3D printing.

At Ryder, we've extensively examined these technologies and disruptive trends to determine how they support smart warehouses, and deliver the most value to our customers while helping them stay ahead of their competitors.

We have prioritized four types of innovative technologies most applicable to creating and supporting a smart warehouse:

- Robotics and automation
- Sensors and automatic identification tools
- Wearable and mobile technology
- Drones

When implemented correctly, these four technologies solve the 5 key attributes Ryder has identified that define a smart warehouse:

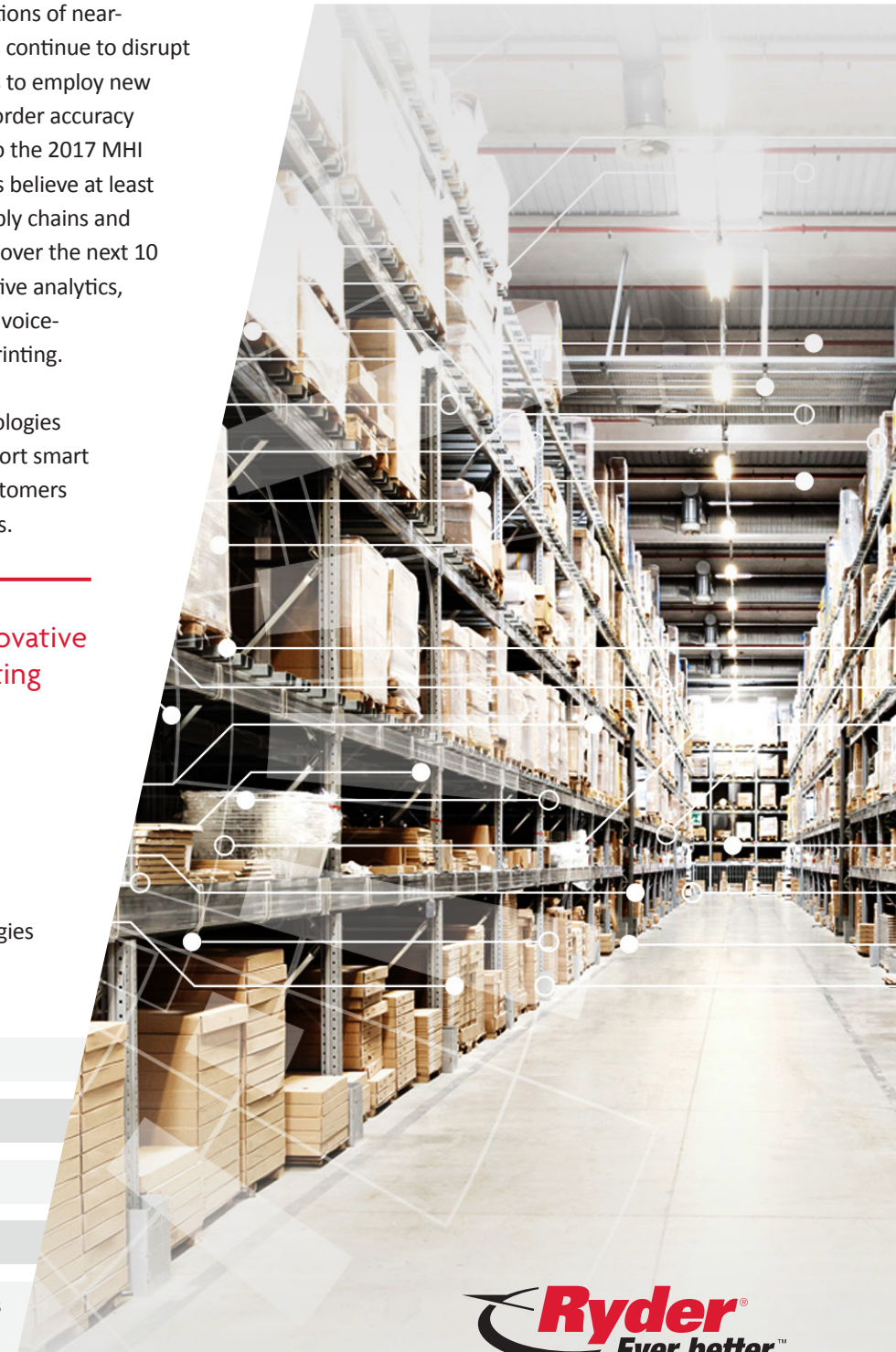
Automate as it makes sense economically

Remain nimble with space, staff, and software

Scale instantaneously in response to needs

Provide 100 percent real-time visibility

Use a web centric approach to run the business and provide a customer centric experience



How the technologies transform the supply chain

Robotics and automation devices include autonomous forklifts, tuggers, transporters, and assembly line vehicles. These devices provide a safe, efficient and reliable solution for the movement of goods in a warehouse, while improving productivity, visibility, and customer service levels.

For example, employees spend approximately 30 percent of their shift traveling inside the warehouse. **Autonomous forklifts** significantly reduce travel time, giving employees more time to complete other, more complex tasks. The implementation of autonomous forklifts at a Ryder-managed warehouse produced 20 percent operating savings by decreasing labor costs, raising service levels, and improving efficiency.

Sensors and **identification tools** automatically locate and profile supply chain objects to capture and communicate data across the supply chain. Inside the smart warehouse, these technologies are used for tracking, tracing, security, inventory consolidation, and event management. They also give complete visibility of products and processes in the warehouse to enable more control and reduce risk through data visibility.

In one application, sensors are used on the clamps of a forklift giving supply chain managers the ability to monitor parameters such as the amount of pressure applied to a product when picked. These sensors also give visibility of data to managers and all employees. This actionable, real-time information can dramatically reduce product damage during the handling and delivery process, as it minimizes risk in the warehouse custody chain and provides significant cost savings in inventory loss and accuracy.

Wearable and **mobile technology** gives managers and employees the capability to exchange data between devices and the network. These devices – including smart phones, scanners, tablets, glasses, and head-mounted systems – give

employees convenient and immediate access to technology and information wherever they are in the warehouse. In smart warehouses, wearables support core processes such as shipping, receiving, routing, inventory management, picking, and replenishment.

Recently, Ryder deployed wearables at a customer's warehouse to improve picking processes. The use of the wearables decreased the time it took to pick and scan inventory by five seconds per item and improved efficiency by 20 percent. When thousands of items are picked daily, those seconds add up to hours saved and lower operating costs.

Drones have many uses in the smart warehouse including inventory management, facility management and security. Aerial drones are used to travel through facilities to map the warehouse and update data on inventory and facility conditions. Manually, this task could take two or more employees and at least one scissor lift to complete. By using drones, employees are better able to focus on value-added functions, assets are freed up, and the task can be completed up to 66 percent faster.

By implementing many of these new technologies, Ryder has positioned customers to overcome the disruption caused by the demand of e-commerce as well as meet rising expectations. With smart warehouses that are flexible, automated, scalable, and customer-focused, supply chains can quickly become the most valuable tool in driving efficiency and meeting customer needs. Consumers are getting smarter, it's time your warehouse does too.



Authored by:

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For more information or to speak to a Ryder expert, call **866-213-1788** or visit ryder.com/smartwarehouse.

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