



Deep Dive  
Q1 2025

# LEVERAGING ROBOTICS IN CRE:

## INSIGHTS FROM FOUR INDUSTRY EXPERTS

In conversations with four leading experts in commercial real estate, this Deep Dive explores the reality and challenges for implementing robotics across different sectors. As robotics continues to become more available, these experts break down the reality for how soon these changes may occur.

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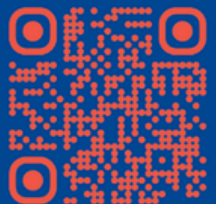
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# Robotics is quietly revolutionizing the way we maintain and operate our commercial spaces, making them safer, cleaner and more efficient than ever before.



Grocery, e-commerce, retail, office, manufacturing, healthcare and more — robotics is making its mark across various sectors. As technology advances rapidly, the commercial real estate (CRE) industry is also being impacted in real time. In this Deep Dive, we explore the latest developments in robotics and how property managers and CRE professionals can stay ahead of the curve. Here's a snapshot of insights and predictions from four industry leaders:

- **Michael Hanlon, Vice President Hosted and Managed Solutions for Allied Universal Technology Services:** “Robotics offers a blended or layered solution to security and operations, providing a cost-effective integration into security programs. It solves for consistent real-time data gathering and automates mundane tasks. Properly scoped, it offers resiliency and cost control, continuing to improve through AI and operational advancements.”
- **Paul Morgan, Chief Executive Officer for Workplace Management, JLL:** “Robotics is like upgrading from a magnifying glass to a high-powered microscope when looking at our operations. This quick view lets us make data-driven decisions faster, often within days instead of weeks or months. If something's not working, we know sooner and can change course; if it's working, we can act quickly. This agility helps us stay ahead of the curve and adapt to market changes, which is essential for staying competitive.”

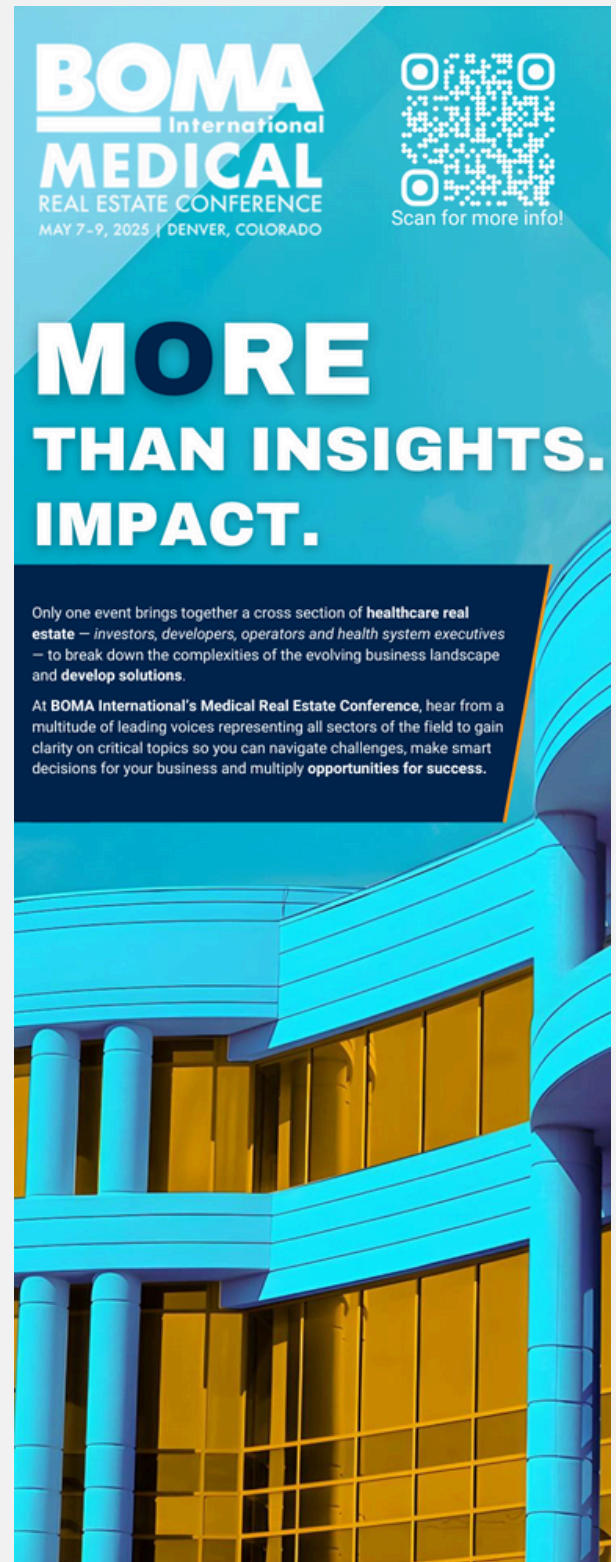
- **Paul Saville-King, Chief Product Officer of CBRE's GWS Enterprise Business:** "Robotics, if used correctly, will be transformative to the future of CRE operations. The integration of AI, IoT and robotics is increasingly shaping the future of facility and property management, especially in industrial, logistics and high-risk environments."
- **Grayson Scott, CBRE Supply Chain Consultant:** "The adoption of robotics/automation isn't a one-size-fits-all solution. It helps automate repetitive tasks, augment labor where talent is scarce, improve efficiency and reduce recurring costs. Robotics in warehouses also enhances customer fulfillment, providing a competitive advantage."

## PART 1: The Impact of Robotics on CRE Operations

"Robotics is quietly revolutionizing the way we maintain and operate our commercial spaces, making them safer, cleaner and more efficient than ever before," **Paul Morgan, Chief Executive Officer for Workplace Management, JLL** says. Along with our other featured experts in this Deep Dive, Morgan expresses optimism about the transformative effects of robotics on the CRE industry and beyond.

Several factors are driving this push for robotics. As Morgan points out, "labor shortages, rising labor costs, and the widespread adoption of AI are fueling the growing need for robotics, not just in real estate operations but across various sectors." The ongoing labor shortage is a significant concern; according to the U.S. Chamber of Commerce, the manufacturing industry alone has 622,000 job openings that remain unfilled. Robotics could play a pivotal role in addressing this challenge. **Paul Saville-King, Chief Product Officer of CBRE's GWS Enterprise Business**, elaborates on how robotics can complement human roles: "Think of it as a physical copilot for every aspect of CRE services," he explains. "In many cases it's not about people at risk of replacement by robotics, it's about material enhancement of the outcomes and the collaboration that will exist between human and robot entities to achieve those."

The push for robotics is notably strong in the manufacturing industry. In warehouses, a variety of climbing autonomous mobile robots (AMRs) are being introduced, such as the Brightpick Giraffe, which "retrieves storage totes from upper-level shelf locations and delivers them to lower levels." These climbing



robots present a solution that differs from traditional Automated Storage and Retrieval Systems (AS/RS) used in warehouse automation. According to [Logistics View Points](#), AS/RS solutions include fixed cranes, shuttles and conveyors, which lack the flexibility that newer technologies offer. For instance, the latest AMRs like Brightpick Giraffe and HaiPick Climb “can reach higher rack levels, optimizing both store utilization and order fulfillment.”

**Grayson Scott, CBRE Supply Chain Consultant**, describes these technologies in further detail: “From a robotics perspective, we frequently see the adoption of capabilities like automated guided vehicles (AGVs) and autonomous mobile robots (AMRs) that reduce travel time within the facility. For larger projects, there is an increasing adoption of automated storage and retrieval systems (ASRS or AS/RS), especially in markets with labor challenges and high real estate costs, such as grocery, e-commerce retail and 3PLs (third-party logistics companies).” Scott emphasizes that robotics is influencing much more than warehouses. Grocery stores are enabling robots to perform tasks that range from simple activities like cleaning, maintenance and restocking shelves to more complex roles such as assisting with order fulfillment, security and surveillance, as noted by [Automate](#). In fact, [Expert Market Research](#) predicts that the North American food robotics market will grow to \$1.94 billion by 2032.

This raises the question: if robotics will inevitably penetrate every market and sector, how does CRE fit in? According to Morgan, the implementation of robotics, while gradual, is set to transform the way tenants experience in commercial spaces. He notes that the speed at which property managers adopt these technologies depends on their willingness to adapt. Traditional brick-and-mortar stores might need to “completely rethink their approach,” while modern health and fitness studios may eagerly embrace these advancements. A [JLL](#) report states, “New tech industries [such as robotics, AI and large language models] will need office, R&D, manufacturing and data center space,” indicating significant promise for CRE. Alongside tech companies seeking ample locations, JLL predicts that robot-accessible spaces will become standard, necessitating ultra-flat floors. In the office sector, Saville-King highlights trends such as “robotic janitors cleaning commercial spaces and robotic delivery systems making package logistics more seamless in smart buildings.” For example, [Primech AI](#) recently launched a HYTRON bathroom cleaning robot, integrated with advanced NVIDIA technology to “redefine commercial cleaning” on a global scale. Additionally, Saville-King predicts that airports and malls will introduce robotics, implementing “security robots to patrol properties, using AI-powered cameras to detect anomalies in real-time, which can then be investigated by real people when necessary.” This reinforces Saville-King’s belief that robotics will serve as a copilot in people’s jobs, not a replacement.

Of course, when discussing robotics involvement in CRE, it’s crucial to address its significance in healthcare. According to the [American Hospital Association](#), robotics is poised to dramatically impact the healthcare industry through advanced surgical devices. For instance, Intuitive Surgical’s da Vinci 5 robot platform is utilized in “many laparoscopic soft-tissue procedures, including cardiac, urologic, gynecologic and general surgeries,” states the AHA. One of the more revolutionary features of surgical assistant Vinci 5, as reported by [MedStar](#), is its ability to perform minimally invasive procedures while saving valuable time and streamlining workflow in the operating room. As these advancements become mainstream, they hold monumental potential for the healthcare sector, promising to save lives and improve overall efficiency.

In the general CRE landscape, Morgan believes that “before we see major enhancements to tenant experiences, the biggest impact of robotics will be in creating consistency.” He explains, “Imagine walking into any office building or shopping center and knowing exactly what level of cleanliness and service to expect. Robots can deliver this consistency day in and day out, raising the bar for average tenant experiences across the board.”

## **PART 2: Real-World Applications of Robotics in Commercial Properties**

This past March, a Georgia warehouse deployed two “Digit” robots, developed by Agility Robotics. The robots perform simple tasks, such as picking up containers and delivering them to a conveyor belt. Yet, as [Futurism](#) argues, this capability has the potential to be far more impactful in existing workplaces than previously imaginable. The Digit robots are humanoids, designed to mimic the human



body with a torso, head, two arms and two legs, and to operate in roles traditionally filled by humans, as described by [Humanoid Robotics Technology](#). Humanoids represent a visually intriguing technological advancement compared to AI and large language models. Futurism suggests that the currently low number of humanoids in the workforce means it will take time to “advance the brains that power the machines.”

However, industry giants like Amazon are rapidly developing and deploying these humanoids, increasing their fleet from 350,000 robots in 2021 to more than 750,000 in June 2023, according to [Tech Spot](#). In fact, over the past three years, Amazon has introduced six significant warehouse robots aimed at “enhancing, not replacing jobs.” The company claims that implementing these robots could save them upwards of \$10 billion annually by 2030. This is just one of many examples showcasing the real-time applications currently emerging in the robotics industry.

Though, as we discussed, robotics is impacting much more than just the manufacturing and industrial real estate sector. “Today, we’re seeing robots take on more roles in commercial buildings, often in ways that are visible,” Morgan says. “Walk into a modern office complex or shopping mall, and you might see robotic floor cleaners quietly doing their rounds or automated systems keeping surfaces sanitized.” These applications are particularly common in high-end commercial properties like luxury hotels, flagship retail stores and prestigious office buildings. Nevertheless, these applications might be more common than one might think. [Reuters](#) reported the completion of the world’s largest 3D-printed neighborhood in Texas, suggesting that these robotic systems may soon become more accessible. According to [Precedence Research](#), the 3D printing market is projected to expand to \$98.31 billion by 2032, opening new pathways for construction.

The role of robotics in the office sector remains a topic of ongoing discussion. According to Saville-King, “robotics will play a key role in the future of tenant experience programs. AI-powered robots will be, and to some degrees are already able to greet guests, handle visitor check-ins, provide directions, manage meeting room bookings and even deliver coffee orders.” Does that sound futuristic? [MIT engineers](#) demonstrate that this multi-skilled robotic service agent, as Saville-King describes, is not as far-fetched as it seems. Through their invention of Clio, a robot shaped like a dog, they have created a device capable of performing tasks in “natural language prompts,” such as moving a rack of magazines, straightening office cubicles, or retrieving a first aid kit. Moreover, Clio isn’t just designed to perform human tasks, according to Luca Carlone, Associate Professor in MIT’s Department of Aeronautics and Astronautics, it can actually power domestic robots that working alongside humans.

While it’s entertaining to program robots for tasks that might seem non-essential, it’s crucial to recognize their significant role in security. Allied Universal exemplifies how robots can be effectively utilized in this essential capacity. Hanlon outlines their applications, including patrolling features that provide real-time detection of unwanted individuals and vehicles. These patrols often involve checking hotspots and conducting site inspections, such as verifying the integrity of fences. Although Allied Universal is bound by privacy restrictions outlined in client contracts and cannot disclose specific client names, Hanlon mentions that they “do have a large manufacturing client that is maintaining the integrity of their perimeter fence through continuous automated scheduled patrols of a drone dog equipped with AI-enabled cameras.”

Saville-King also mentioned the effectiveness of security devices like the ROSA180 from [Robotic Assistance Devices \(RAD\)](#), a stationary unit equipped with cameras and two-way communication capabilities. According to RAD, their devices can detect and deter instances like trespassing, loitering and vagrancy which often lead to more serious or costly crimes. “CBRE honored this solution with a shortlist for ‘Best Workplace Experience Solution’ award as far back as 2021, recognizing its potential to bolster on-site safety,” Saville-King notes.

In addition to enhancing security on commercial properties, staying proactive in healthcare and safety— especially during the COVID-19 pandemic—was crucial for reshaping how we effectively address crises in real time. For instance, [Forbes](#) highlights two specific robots, [Mitra Robot](#) and [Moxi](#), which significantly aided organizations during the pandemic by assisting clinical staff with tasks such as

transporting patient supplies, delivering lab samples, and fetching items from central supply. “Healthcare organizations worldwide employed robots to be able to speak with patients, interface with personnel in facilities and perform key functions to avoid placing people in danger of contamination,” Forbes states.

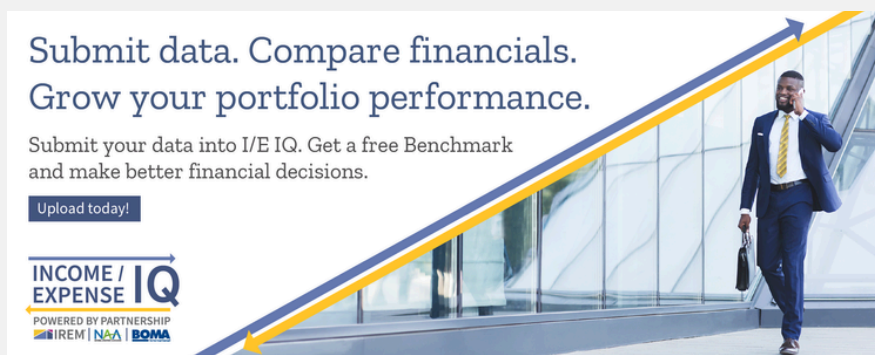
The robots cited by Forbes are more examples of humanoids – robots that mimic the human body. Another related term is Robotic Process Automation (RPA), which refers to technology that uses software to imitate human actions, automating repetitive and rule-based tasks, according to [Repsol](#). In the real estate sector, Saville-King mentioned that CBRE has leveraged RPA in lease and tenant management operations, leading to faster and more efficient administrative workflows. “The impact was substantial – achieving roughly a 60% reduction in processing time for these tasks,” Saville-King states, noting that this efficiency gain enhances service delivery to clients.

When considering the best use of RPA and other robotic systems, the options can seem endless regarding what is most crucial for your property. For instance, the growth of data centers is projected to reach investments of \$1 trillion by 2027 ([PwC](#)), making it a target worth pursuing. According to [Data Center Dynamics](#), Google has already begun testing robots for managing hard drives and equipment. On the medical real estate side, RPA is poised to be transformative in maintaining safety and health. Morgan from JLL provides a compelling case study that captures the essence of robotics’ potential: “A government agency was struggling to assist a client in mitigating COVID-19 risks, and as a result, implemented the DX5 mini UV-C Disinfection Robot by Datumstruct, an autonomous robot using ultraviolet-C light for surface decontamination,” Morgan explains. “The robot effectively eliminated about 99% of bacteria and viruses, reducing the need for manual cleaning and improving staff protection.” Through these technologies, we’re able to revolutionize our processes, helping streamline operations and improve individual experience along the way.

## PART 3: Challenges and Strategies for Successful Robotics Integration

With organizations like the [Boston Consulting Group](#) predicting that the global robotics market will climb to \$260 billion by 2030, the prospect of these systems appearing in our buildings feel closer than ever. However, the key word here is “possibility.” While countless companies are launching, investing in and testing their own robotic systems, Morgan observes, “With commercial real estate, we’ve been a bit slower on the uptake [in implementing robotics].” He explains that this hesitance is not due to CRE being “resistant to change,” but rather because the biggest hurdle is the initial cost. “Introducing robots into a workplace is a significant capital investment, and for many commercial real estate owners, occupiers and tenants, it must be part of a long-term strategy,” Morgan states. “However, this barrier is getting lower every day.” According to [CFO Dive](#), the key to investing in robotics may not only be cost but also patience. Their article highlights that “companies that invest in mobile robots may need to wait two to three years on average to see a return on investment.”

Given the slower than anticipated adoption of robotics in CRE, several challenges arise for successful tech implementation. In addition to the initial cost investment and the patience required to see a return, other concerns include logistics related to how this technology will integrate with existing job functions. Below are some strategies to consider when seeking solutions for implementing robotics:



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# If robotics will inevitably penetrate every market and sector, how does CRE fit in?

- 1. Working alongside robots:** As Saville-King emphasizes, it's important to prepare workforces to collaborate with robots rather than view them as replacements. "Robotics can help employees to get away from repetitive or labor-intensive tasks to instead focus on higher-skill work. As mentioned already, workforces should look at smart technologies, including robots, as resources that will allow them to develop skill sets and take on work that they otherwise wouldn't get to experience." Alongside learning to work with robotics, there is inevitably a learning curve for employees to successfully understand and monitor this technology. This is where training becomes crucial. "A lack of expertise and training within the existing workforce can be a hurdle for successful robotic implementation," Scott states. He believes that training employees to perform maintenance inspections and ensure reliability with these systems should be considered a key success factor before adoption. Addressing concerns about robots taking over jobs, Hanlon provides his perspective: "There is always a need for the 'human in the loop.' Whether it is an onsite officer to assist during business hours or a Security Operations Center (SOC) offering alert or call based response, it is important to address this 'challenge of adoption' and to stay committed to technology enabled guarding rather than just technology or solely staffed services." Overall, robotic surgery platforms have rapidly expanded over the years and continue to address common challenges.
- 2. Staying agile:** According to Saville-King, "Much like other smart technologies, the robotics landscape is evolving rapidly. CRE leaders need to ensure they are continuously evaluating emerging technologies so they can remain adaptable. This underscores the importance of ensuring that the integration of the right technology is effectively executed." Scott warns, "there can be issues with software systems integration, including the warehouse management system (WMS), enterprise resource planning system (ERP), and other legacy software."
- 3. Identifying the focus:** Determining which areas of your company would benefit most from a robotic assistant is crucial. Saville-King advises, "CRE professionals should start with targeted areas (e.g., security, cleaning, concierge services, etc.) and ensure they can be properly integrated before expanding across operations." Scott echoes this sentiment, emphasizing the need for businesses to understand their order profiles and whether their buildings are equipped for this technology. "Not all operations are suitable candidates for complete adoption of warehouse robotics, as the facility design and ability to automate heavily rely on the associated order profiles and overall business requirements," Scott states. Additionally, Scott notes the importance of considering space suitability for robots while also assessing costs. "Warehouse robotics and automation can require substantial capital expenditure, and while the long-term ROI might be high, the initial investment can hinder adoption," he explains.

These strategies can help businesses assess what is most important to their current needs. Identifying the primary focus of how robots can improve operations is crucial. For instance, in healthcare, several companies are pinpointing key concerns that can be addressed through robotics. Platforms like the da Vinci 5 are opening doors to numerous solutions in the medical field while fostering healthy competition. Recently, large institutions such as Cleveland Clinic, New York University and Cedars-Sinai Medical Center in Los Angeles have begun using the newly developed Symantec Surgical System.

Created in partnership with the University of South Florida, Tampa General Hospital and Medical Microinstruments Inc. (MMI), this device is revolutionizing soft-tissue open surgery. According to the [American Hospital Association](#), this development could enhance the quality of life for many patients, including those suffering from lymphedema due to cancer. Furthermore, surgical robots are

expected to expand in ambulatory surgery centers, particularly in orthopedic robotics, as “large-joint replacement continues to grow.” By concentrating on a primary focus, such as improving surgical precision, these companies can effectively invest in robotics, knowing they are addressing their most pressing concerns.

While identifying a primary focus, staying agile and ensuring employees are trained to operate robotic systems, the CRE industry is poised for rapid growth, similar to other sectors. As Morgan observes, “We’re starting to see more tangible benefits from robotics in our industry. It’s not just about automating tasks anymore; it’s about creating more resilient businesses that can weather unexpected storms. Robotics are helping us hedge against risks we might not have even considered a few years ago.” Quickly identifying risks is becoming increasingly important. Although robotics are developing faster than many can keep up with, Saville-King highlights the technology’s transformative impact, stating that not adopting robotics would be akin to “not having a smartphone”: “From my perspective, the way we see services delivered, the cost of delivering those services, and the experiences those services create will be so fundamentally different in 10 years that it will be like imagining life without a smartphone today; that’s how dramatic the shift will be and how deeply it will be integrated into the way we do things.”

As we look ahead to the possibilities of robotic implementations in CRE, our industry experts share their advice for companies considering robotics integration:

- **Hanlon:** “My advice to CRE and others considering robotics is ‘take a look.’ Work with a company like Allied Universal that offers integration services, robotics and staffed guarding so you are getting a true assessment focused on your desired outcome rather than a product pitch or shiny box. Be specific in the scope and desired outcome and understand that if the solution isn’t there today, it is likely coming. The ability for robotics to navigate terrain, connectivity, and AI capabilities such as LPR, weapons detection and anomalous activity continue to advance on a rapid basis. They may not be for everyone, but they continue to improve and to solve for more.”
- **Morgan:** “We need to invest in our people just as much as we invest in our robots. This means building strong teams of specialists who understand both the technology and our industry. It’s not just about having the latest gadgets; it’s about knowing how to use them effectively in our unique context. We can’t do this in a vacuum. We need to keep our finger on the pulse of industry trends, conduct thorough market research, and really listen to feedback from our clients and employees to help stay relevant in a rapidly changing market.”
- **Saville-King:** “CRE leaders have an opportunity to think beyond how things have always been done and create real change within the industry. They should find ways to stay up to date on new technologies, research, and other innovations, and expand their network to include those that can advance both their ambition and understanding. If you are looking for a place to start your robotics journey, consider this list: Seek professional advice—most people wouldn’t select a pension or mortgage without consulting experts, and the same applies here. Understand AI and IoT integration; robotics should work seamlessly with smart building systems to unlock their full potential. Prepare your workforce by training employees to work alongside robots rather than viewing them as replacements. Focus on ROI and tenant experience, as the best robotics solutions enhance efficiency while improving tenant engagement and satisfaction. Stay agile; the robotics landscape evolves rapidly, and CRE leaders should continuously evaluate emerging technologies while remaining adaptable. Start small; being overly ambitious at the outset without the necessary capabilities, competence, and experience could hinder progress. Build momentum first. Lastly, invest in change management, as poor change management can derail any ambitions in this area.”
- **Scott:** “Start with the current state: understand the facility layout, processes, people, systems, and data as they are today, and identify the problems the organization wants to solve. Then, understand the growth trajectory of the organization; knowing where the company will be in 3-5 years is crucial. Leaders should work with their operating talent to establish the guiding principles for pursuing automation. Starting small and testing automation may also be an optimal solution for companies that have never adopted any form of robotics. Furthermore, organizations should focus on maximizing the return on investment for automation. If organizations are not familiar with the right technologies, strategies, and complexities associated with warehouse robotics, then finding the right partner is crucial to help navigate the road ahead.”

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