TOP 5 STARTUPS TO WATCH: WAREHOUSE ROBOTICS

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INTRODUCTION

Digital leaps in areas like AI and autonomous technology are fundamentally changing the way goods and people move around the world. Startups are the lynchpin of this transformation, pinpointing areas of need that can be tackled by cutting-edge digital solutions, including digital freight services, warehouse robotics, AI in the supply chain, delivery robotics, and autonomous driving software. That's ultimately forcing incumbents to evolve or see their core businesses erode. Monitoring these startups thus offers unique insight into the development of the transportation and logistics industries at large, and how incumbents are defending their turf.

In a series of five notes, Business Insider Intelligence looks at the top startups disrupting transportation and logistics. In the first note, we discussed the leading startups in digital freight and offered an assessment of their value and impact on the sector. In this second note, we will examine the startups spearheading the rise of warehouse robotics. The third note will explore startups offering AI software to improve the routing of shipments and speed up delivery times, and the fourth note will dive into the robotics startups automating last-mile delivery. Finally, the fifth note will analyze the startups developing autonomous driving software and how they’re challenging big automotive and tech companies in the race to put a self-driving car on the road.

WAREHOUSE ROBOTICS: IMPROVING EFFICIENCY IN ORDER FULFILLMENT AS VOLUMES RISE

Shipping companies are in a tight race to adopt the latest and most advanced warehouse technologies, as they look to combat a slew of new pressures facing the industry. Warehouse robotics — defined by Business Insider Intelligence as robots that primarily serve to transport, sort, or identify goods within a warehouse, logistics fulfillment center, or brick-and-mortar retail stores — are at the core of these efforts. They scurry around the floors of logistics facilities, snap pictures of inventory, and help transport goods that are eventually loaded onto delivery trucks.

Here's a look at some of the drivers behind the growing adoption of these systems:

- **Package volumes are advancing at a steady clip due to the rise of e-commerce.** Business Insider Intelligence projects annual global e-commerce volume will rise 91% over the next five years, hitting $23 trillion in 2023. Combined with consumers' increasing expectations that their orders arrive in only a few days, this means shippers and retailers need to be more efficient than ever before.

- **Logistics companies and retailers are struggling to expand their existing warehouse space.** Square footage, especially in urban areas, is scarce for warehouses and brick-and-mortar stores alike, meaning companies often can't expand their outdated facilities, or build new ones. As a result, they are being forced to find ways to get packages out the door faster.

- **A shrinking labor pool has put warehouse operators in a difficult bind.** The highly publicized truck driver shortage is probably the most well-known issue plaguing the logistics labor market, but it's only part of the problem. Demand for workers generally has increased steadily over the last five years, Nathan Coin, director of divisional operations-commercial division at Aerotek, a national recruiting and agency, recently told Supply Chain Dive. Recruiters and colleges have tried to expand the labor pool through training programs and higher wages, but those efforts haven't yet mitigated the issue.

Meanwhile, Amazon — which accounted for 44% of all US e-commerce sales last year — acquired Kiva Robotics back in 2012 for a whopping $775 million, putting the retail and logistics industries on notice. That ignited a race among companies trying to keep pace with the Seattle-based behemoth, ultimately pushing firms to turn to a growing number of startups.

TOP 5 WAREHOUSE ROBOTICS STARTUPS

Name	Total Investment	Notable Investors	Markets	Highlights
Bossa Nova Robotics	$69 million	• Intel Capital • LG Ventures • Paxion Capital Partners	• Offers robotics for retailers and primarily serves the North American market	• Walmart uses Bossa Nova's robots to scan shelves in 50 of its stores
6 River Systems	$46 million	• Menlo Ventures • Eclipse • iRobot	• Builds two-story robots that carry small containers of inventory around for the US and European markets	• Its executive and engineering teams are comprised primarily of ex-Kiva Robotics employees
Geek+	$81.7 million	• Warburg Pincus • Vertex Ventures	• Chinese startup that makes short, square robots and is backed by the government's Made in China 2025 plan	• Products reduce labor costs 50-70%, counts Alibaba as primary customer
Locus Robotics	$33 million	• Scale Venture Partners	• Makes tall, scooter-shaped robots for the US market	• Robots can double the productivity of human workers
GreyOrange Robotics	$30 million	• Tiger Global Management	• Sells square-shaped robots and picking systems for the $200 billion Indian e-commerce market	• Counts Flipkart as a customer in India and is aggressively expanding into Australia and Japan

Source: News reports, Crunchbase, Morgan Stanley, ZDNet, company websites

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TOP 5 STARTUPS IN WAREHOUSE ROBOTICS

We selected each startup based on the amount of funding it's received, the value of its products, the potential value of the market it serves, the quality and number of its customers and partners, and the number of noteworthy investors — either from within the industry or the technology space more broadly — it has secured.

Startup: Bossa Nova Robotics

Year founded: 2005

Notable investors: Intel Capital, LG Ventures, Paxion Capital Partners

Why it's worth watching: Bossa Nova Robotics makes foot-four-tall robots that are primarily designed for scanning shelves in warehouses and brick-and-mortar stores to keep track of inventory. The company was spun out of Carnegie Mellon's Robotics Institute back in 2005, giving it a crucial early mover advantage in the industry. It leveraged this head start to secure a relationship with the largest brick-and-mortar retailer in the US: Walmart uses the company's products to manage inventory in 50 of its stores — the robots scan shelves three times a day to determine which products need to be restocked. In addition, Bossa Nova partnered with Flex, a US-based contract manufacturer, to partially outsource production. That's enabled the company to manufacture more robots and better meet customer demand.

What's next: Bossa Nova intends to increase its workforce by 50% using its recent $29 million funding round, primarily by adding software developers and engineers to help customers derive more usage data and insights from the robots. Earlier this month, the firm purchased HawXeye, a Pittsburgh-based AI startup that specializes in object recognition technologies. Integrating the startup's software into Bossa Nova's products should allow the robots to recognize more objects, ultimately broadening the settings they can be used in. Meanwhile, the company will also actively seek new use cases for its products, including using its robots to restock shelves in the front of brick-and-mortar retailers and grocery stores.

Startup: 6 River Systems

Year founded: 2015

Notable investors: Menlo Ventures, Eclipse, iRobot

Why it's worth watching: 6 River offers a robot called Chuck that has two levels to carry containers of inventory around retail stores, warehouses, and fulfillment centers. A bundle of eight robots costs $250,000, and 6 River charges $50,000 annually for maintenance. The company was founded by a trio of former Kiva Robotics execs back in 2015, affording it unique technological and business insights into the burgeoning space. That's helped the startup secure high-profile customers like XPO Logistics, the largest shipping company in the US by net revenue last year. In addition, the company has a Robotics-as-a-Service offering that allows customers to rent robots for a specified time period, typically around the busy holiday shopping season when package volumes are highest. That's ideal for mid-market e-tailers and 3PLs that can't afford the high upfront costs of its core product, and ultimately allows 6 River to reach a part of the market that its competition currently cannot.

What's next: The startupwill gain the necessary regulatory approval to start delivering products to customers in the EU later this year, helping it tap into a market that E-commerce Europe projects will see total sales grow 13% this year to reach $705 billion. 6 River will also likely look to develop new products to help it stay ahead of other startups and incumbents that are developing their own robots in-house.

Startup: Geek+

Year founded: 2015

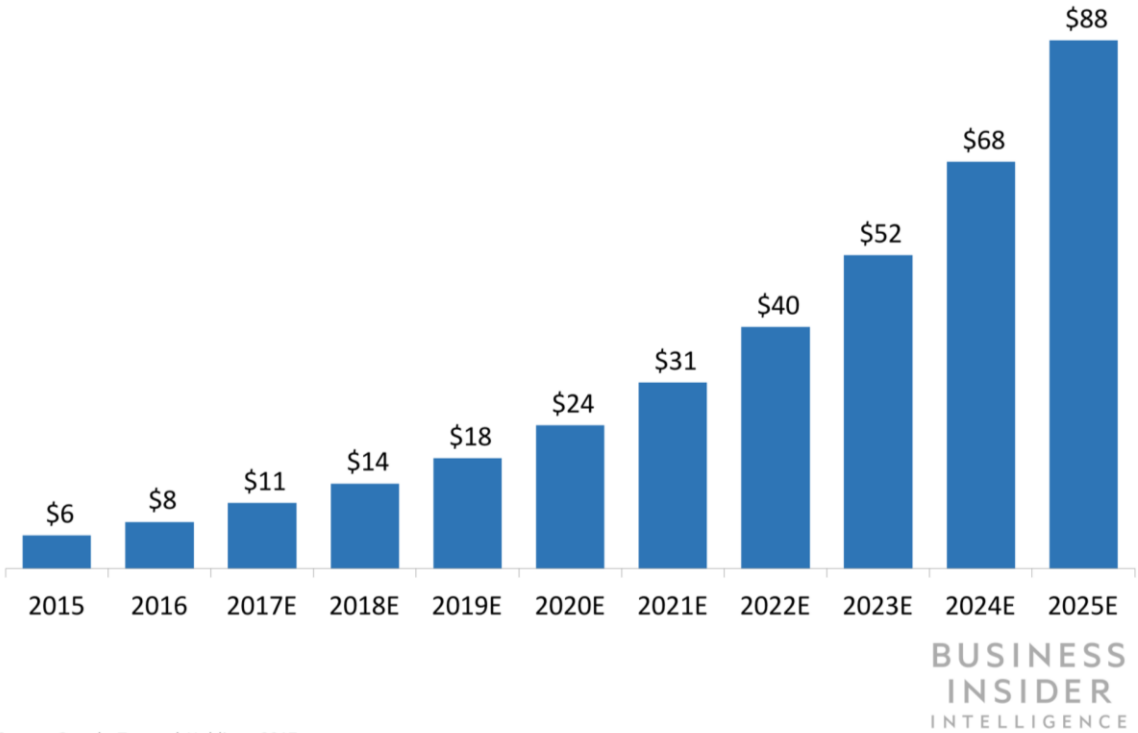
Notable investors: Warburg Pincus, Vertex Ventures

Why it's worth watching: Geek+ offers square-shaped robots that carry packages around warehouses for human workers to pick up and put on trucks for delivery. The packages sit on top of the robots to make retrieval easy. The company, which primarily serves online and brick-and-mortar retailers, is backed by the Chinese government's Made in China 2025 plan, which has helped it become the leading warehouse robotics firm in the country's $35 trillion logistics industry. Geek+ has sold more than 3,000 robots to over 20 customers in China, including Alibaba, China's largest e-commerce firm by transactions. The e-commerce behemoth plans to ramp up its logistics network to handle 1 billion packages a day, up from 100 million daily packages, and Geek+ will play a critical role in facilitating that growth.

What's next: Geek+ said earlier this year that it planned to expand to North America in the not-too-distant future. In addition, the company gained CE Mark approval from the EU this past February, which certified that its products are safe and reliable enough to be sold within the supranational union. Meanwhile, its primary customer Alibaba is rumored to be eyeing several international markets, including Southeast Asia. Geek+ could easily piggyback off of the e-commerce titan's expansion plans to grow its own footprint.

Size Of Southeast Asia's E-Commerce Market

Billions ($)



Source: Google, Temasek Holdings, 2017

Startup: Locus Robotics

Year founded: 2014

Notable investors: Scale Venture Partners

Why it's worth watching: Locus produces tall, scooter-shaped robots that are designed to carry inventory around warehouses and inventory management facilities for logistics companies. The company was spun out from Quiet Logistics, one of the leading regional 3PLs in New England, back in 2014. That helped it gain some wherewithal among legacy players in the logistics industry and capture a handful of impressive customers and partners. Locus serves DHL and RK Logistics Group, a mid-market 3PL based out of California. Perhaps more importantly, the company's products have proved to be incredibly efficient — Locus said earlier this year that its customers are already seeing doubling or tripling of fulfillment speeds with near-100% accuracy, ultimately saving them at least 30% in operating expenses.

What's next: Locus said last fall when it closed its $25 million Series B funding round that it planned to use the new capital to build new products, expand into Asia, and bolster its sales and marketing efforts.

Startup: GreyOrange Robotics

Year founded: 2011

Notable investors: Tiger Global Management

Why it's worth watching: GreyOrange offers square-shaped, foot-tall robots, dubbed Butlers, that hold pallets of inventory on their tops and move them around retailers' and shipping companies' warehouses. The company latched onto the Indian e-commerce market early on, affording it access to a lucrative and growing arena — Morgan Stanley projects the Indian e-commerce market will grow 30% annually to reach $200 billion in 2020. Its focus on India allowed it to secure Flipkart — which brought in $3 billion in revenue last year alone and controls 32% of the Indian e-commerce market — as a customer. From there, GreyOrange was able to leverage its clout to add lucrative customers like Mitsubishi and Mahindra, one of the largest automakers in India by revenue, and expand overseas into Japan and Australia.

What's next: GreyOrange recently revealed its "Butler PickPal" robotic picking system that works with its core Butler robots. The company says the system can manage up to 48 orders at once and reach up to 600 picks per hour. The firm said in March that it planned to start shipping the system to customers in the middle of this year. Meanwhile, the company will likely try to build on its presence in Japan and Australia to expand further outside its home country, potentially to Southeast Asia or China.

Download the charts and data in Excel »

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