FROST & SULLIVAN

inVia Robotics

2022 TECHNOLOGY INNOVATION LEADER

North American Goods-to-person Robotics Industry

Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each award category before determining the final award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. inVia excels in many of the criteria in the goods-to-person robotics space.

Commitment to Innovation, Creativity, and Application Diversity

eCommerce businesses today are struggling to cope with the spike in consumer demand and how to meet same-day or 2-day delivery times, especially with the increased challenge of access to labor. A few years ago, labor was available but expensive. Two years after the start of the COVID-19 pandemic, labor has become even scarcer because most people do not want to work in a warehouse environment and because they are finding other higher paying jobs. Another challenge is the increasing volume of orders. Consumer spending and online purchases are still high, creating the pressure to support all orders on a global scale but without enough workforce resources and infrastructure. Automation and robotics can help organizations solve these challenges, with a minimal warehouse workforce, by automating repetitive manual tasks, leading to optimized operational efficiency and increased worker productivity.

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> ***- Sankara Narayanan, Senior Industry Analyst***

California-based inVia Robotics offers automation solutions that are a unique combination of autonomous mobile robots, powerful artificial intelligence (AI)-driven optimization software, and a full-service robotics operations center (ROC). To this end, inVia's goods-to-person solution automates picking tasks and order fulfillment processes, thus improving and optimizing the efficiency of pickers and

sorters in warehouses and overall warehouse operations. inVia's autonomous robots assist with gross manipulation tasks, such as picking up boxes or something larger and bringing them to the workers who pack or sort the items into other boxes to be shipped, eliminating the costly need for workers to walk through large warehouses.

inVia's Picker Wall: In addition to offering automation and robotics solutions, InVia enables workers to be even more productive, often receiving 10 times the productivity. For instance, workers are unproductive during every rest break, which costs the company money. Furthermore, one of the most challenging problems in the eCommerce space is the random access to stock keeping units (SKUs). eCommerce warehouse facilities that are usually 250,000 square feet, which is comparable to 3 football fields, have about 100,000 SKUs that are distributed across the warehouse. Random access to items occurs when a person goes to every location, picks items as quickly as possible, organizes them into orders, and then sends them out the door.

To address this, inVia offers picker robots that bring the SKUs or each day's ordered goods to a Picker Wall, rebuilding this highly dynamic wall every day and eliminating the need for workers to walk through the warehouse. Moreover, these robots can perform these tasks off shift; therefore, warehouse workers will have everything laid out for them each morning, allowing them to pull the ordered quantity of each SKU from this wall, sort them into orders, and ship them to customers. To this end, inVia shrinks the warehouse into a small spot for workers (i.e., the Picker Wall) so that they do not have to go to every location in the warehouse, making them as productive as possible.

inVia's Picker Wall generates high productivity rates and maximum efficiency in warehouse picking operations because robots work independent of workers. Even if workers take 15-minute breaks, robots continue placing orders and moving ordered goods to the front of the warehouse. Many warehouse workers are now avoiding warehouse jobs because of the highly demanding working conditions. With the Picker Wall, these workers enjoy this labor pattern because they are now getting their break time while the robots continue working. In addition, InVia's robotics system can handle all kinds of totes that come in different shapes and sizes. Different customers use various racks, and inVia's robots can adapt to the various kinds of infrastructure. In addition, inVia helps warehouse workers with returned items that need to go back to the warehouse.

With the Picker Wall system, overall productivity is high, with inVia providing a 720-units-per-hour (uph) productivity rate. While other systems can provide 700 or 1,000 uph, they only provide such rates for retail fulfillment (i.e., collecting 1,000 of the same units from a pallet) and not for eCommerce. Customers, therefore, choose inVia because a worker picking in a warehouse manually is at 60 to 70 uph, whereas inVia raises that uph by 10 times.

Previously, inVia allowed the warehouse management system (WMS) to decide when work should be conducted; however, inVia now manages all the orders. For example, the company's solution manages the work orders and the availability of labor to minimize each worker's idle time, such as time spent waiting for the next job to appear. To this end, inVia looks at all the orders and constantly replans to see where and when the orders need to go to meet the customer's service-level agreement (SLA). For example, if an issue occurs during the replenishment of a particular item, inVia reformats all orders going down the line for a different completion time and then sets new orders so that no work order is

waiting and no worker is idle, thus meeting the SLA.

Even during the COVID-19 pandemic, eCommerce companies had their highest volume days during May and June 2020, which was unexpected. When order volumes are high, the requirement for more robots increases as well. inVia's Picker Wall, however, ensures that the existing number of robots are utilized more efficiently. Frost & Sullivan is impressed that inVia's Picker Wall helps customers manage such high volumes of orders with the same number of robots. In addition, inVia experienced problems with manufacturing and sending the robots, in addition to having issues with logistics in general and chip shortages. Rather than only sending a specific number of robots to customers, inVia improved the efficiency of its existing robots by 25% through the Picker Wall method. Moreover, inVia owns the number of robots and can thus divert money into engineering to make the robots more efficient, rather than building more robots.

Competitive Differentiation: Traditional shuttle systems that run on tracks throughout the warehouse are fixed automation that are rigid, expensive, and time consuming to deploy. inVia is different because it provides customers with the flexibility/ability to move the robots to other locations because everything is mobile and virtual, with nothing fixed to the floor. In addition, customers can work with existing infrastructure, without requiring any significant reengineering or substantial changes to the existing environment.

Unlike old shuttle systems and fixed automation that are not easily adaptable to meet evolving business and customer needs, inVia's flexible solution adapts to various business conditions in the highly dynamic eCommerce space. For instance, the demand for items from January through November is different than during the peak time in December; however, inVia's solution can adapt to such seasonal changes on demand. In addition, customers use inVia because of the quick deployment time. For example, inVia's customers can be up and running in about three weeks to a month, whereas traditional systems can take up to two years.

Customer Acquisition, Financial Performance, and Growth Potential

inVia offers comprehensive robotics services and customer support, whereas other robotic companies sell or lease the robots. When robots are leased, customers still pay the monthly amount, even for unproductive robots. For instance, in a leasing model, where a robot costs $4,000 per month and with 10 robots, customers pay $40,000 per month; however, if the robots are unproductive, customers still pay $40,000 per month; therefore, customers must ensure that their robots are always productive.

inVia's true robotics-as-a-service (RaaS) business model is appealing to customers because the company does not lease or sell robots but instead sells the productivity of the robots and systems. The company bills customers based only on each robot's productivity and not for the robot itself. For example, customers pay inVia for the total throughput they will receive per hour from the robotics system. If inVia's customers do not receive the required productivity, then inVia does not get paid. To this end, if the robots are standing still, then that unproductive time is on inVia and not the customers. inVia, therefore, designed the Picker Wall to ensure both workers and robots are always productive and that any dependencies between robots and workers are eliminated.

inVia continually strives to make its robots operate quickly and efficiently so that customers need fewer robots. Moreover, the company is working toward speeding up its deployment process, building a partner network, and training these partners to support more customers, especially internationally, thereby helping inVia achieve additional revenue growth and expand into other regions. inVia is working on innovations in sortation and in density (i.e., containing as many items as possible within a given area). For example, inVia introduced a taller robot that can extend higher to pick items. In addition, inVia is working to add 5G in robots currently using Wi-Fi. With 5G, inVia will not need the Wi-Fi infrastructure in the warehouses.

inVia's ROC customer support structure operates worldwide, monitors all robots remotely, and has instant access to any technical problems that customers might have. The ROC often fixes problems before customers are even aware of them. inVia's customers can achieve 100% uptime because the ROC operates without disrupting operations and services. Instead of customers needing IT personnel in-house to troubleshoot problems, inVia performs all troubleshooting for customers through its ROC team; therefore, customers receive instant responses on all issues.

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Some of inVia's leading customers include Wagner Logistics, Cascade Orthopedic & Supply, Cargo Cove, and Gnarlywood. inVia had 300% revenue growth in 2021 and raised $30 million in Series C funding from several big strategic investors, such as Microsoft, Qualcomm, and Hitachi. inVia closed the round in July 2021.

Each of these investors has created strategic partnerships with inVia. Qualcomm is expected to help inVia with the chip shortage and to convert more quickly to 5G. Microsoft and inVia are creating a native integration with Microsoft's WMS, whereas Hitachi Ventures is helping inVia scale and build the operation side. inVia is already operating in Canada and Japan and is looking to expand in Europe. The support from strategic investors is expected to enhance inVia's team size, product innovation, working capital, and customer engagement going forward.

Conclusion

eCommerce warehouses need systems that improve the order fulfillment process, maximize warehouse and worker productivity, and enable full-scale automation across SKUs.

inVia's dynamic Picker Wall and warehouse optimization system that leverage AI-driven software and fully autonomous, mobile robots successfully address this need. inVia's Picker Wall allows robots to work nonstop and independent of workers so they can take breaks or work in short periods of time, leading to better labor utilization and faster fulfillment times. In addition, inVia ensures that customers' SLAs are met.

Frost & Sullivan applauds inVia for maximizing worker productivity and providing eCommerce organizations with an easy way to introduce autonomous mobile robots and the Picker Wall into their business. To this end, the company's RaaS model, ROC, and quick deployment further enhance its customer value proposition.

Furthermore, by using more efficient robots, inVia's customers can manage higher volumes but with the same number of robots, and inVia's next generation of flexible warehouse optimization solutions empower customers to respond promptly to any changes or industry disruptions.

For its strong overall performance, inVia earns Frost & Sullivan's 2022 North American Technology Innovation Leadership Award in the goods-to-person robotics market.

What You Need to Know about the Technology Innovation Leadership Recognition

Frost & Sullivan's Technology Innovation Leadership Award recognizes the company that has introduced the best underlying technology for achieving remarkable product and customer success while driving future business value.

Best Practices Award Analysis

For the Technology Innovation Leadership Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

Technology Leverage

Commitment to Innovation: Continuous emerging technology adoption and creation enables new product development and enhances product performance

Commitment to Creativity: Company leverages technology advancements to push the limits of form and function in the pursuit of white space innovation

Stage Gate Efficiency: Technology adoption enhances the stage gate process for launching new products and solutions

Commercialization Success: Company displays a proven track record of taking new technologies to market with a high success rate

Application Diversity: Company develops and/or integrates technology that serves multiple applications and multiple environments

Business Impact

Financial Performance: Strong overall financial performance is achieved in terms of revenues, revenue growth, operating margin, and other key financial metrics

Customer Acquisition: Customer-facing processes support efficient and consistent new customer acquisition while enhancing customer retention

Operational Efficiency: Company staff performs assigned tasks productively, quickly, and to a high-quality standard

Growth Potential: Growth is fostered by a strong customer focus that strengthens the brand and reinforces customer loyalty

Human Capital: Commitment to quality and to customers characterize the company culture, which in turn enhances employee morale and retention

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The Growth Pipeline Engine™

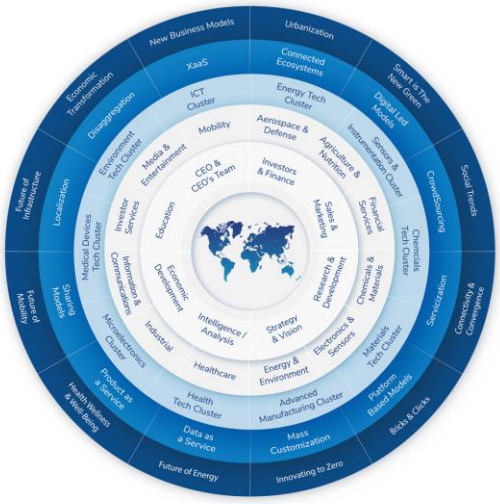
Frost & Sullivan's proprietary model to systematically create ongoing growth opportunities and strategies for our clients is fuelled by the Innovation Generator™.
Learn more.

Key Impacts:

- **Growth Pipeline:** *Continuous Flow of Growth Opportunities*
- **Growth Strategies:** *Proven Best Practices*
- **Innovation Culture:** *Optimized Customer Experience*
- **ROI & Margin:** *Implementation Excellence*
- **Transformational Growth:** *Industry Leadership*

The Innovation Generator™

Our 6 analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.



Analytical Perspectives:

- Mega Trend (MT)
- Business Model (BM)
- Technology (TE)
- Industries (IN)
- Customer (CU)
- Geographies (GE)