

## Report Highlights

- Technology Maturation is Fueled by Competition
- Workforce Needs to Evolve with Technology
- Point Solutions Are Short Term Winners
- Software Connectivity in the Warehouse Will Drive Long-Term Success
- Interoperability Standards Will Drive Merger Activity Over Time
- RaaS is Emerging as a Winning Business Model

## A Look Back at the A3's AMR & Logistics Conference

The AMR conference in Memphis provided a fantastic forum to give participants an opportunity to reconnect in person to discuss the latest trends, experience technology firsthand, and prepare for the next 18 to 24 months of developments in the space.

Cascadia Capital was thrilled to sponsor the conference, add to the panel discussions with top tier innovators, and contribute to the fun by hosting a premium rum tasting event.

Our recent [Supply Chain Market Quarterly Report](#) highlighted many of the themes echoed at the conference which included (i) hardware adoption in warehouses creating much needed efficiency, (ii) software advancements driving process flow integration, (iii) an increased focus on capital markets activity, and (iv) point solution consolidation driven by interoperability standards that create cohesive processes and enable end-to-end solutions for customers.

Our primary observation from the conference is that AMRs, and warehouse technology generally, is evolving rapidly with deployments on the rise and market leaders positioned for J-curve growth over the next 12 months. Investors and acquirers would be well-advised to pick their spots as the landscape is maturing and leaders vs. followers will quickly be determined.

Sources: Business Wire, Dexterity

## Key Takeaways

### 1 Technology Maturation is Fueled by Competition

- **AMR and logistics vendors are creating multiple solutions to solve the same problems in the warehouse** - Given the similar applications, investors have been incentivized to place bets on differentiated technologies that are poised to gain customer traction at an accelerated pace.
- **Company competition creates the need for larger rounds** - As companies compete, R&D expense and pipeline execution will fuel cash burn in line with technology advancement and customer traction.
- **Large rounds come with large valuations and expectations** - Large rounds provide liquidity runway and ample resources but also create execution pressure on issuers to perform in line with significant growth and profitability targets.

## DEXTERITY

- *Dexterity's recent \$140M Series B announcement is an example of the growing trend of larger Series B rounds companies are raising to position themselves for growth and product deployment.*
- *Large raises are accompanied by large valuations, as seen with Dexterity's \$1.4B valuation for its Series B.*
- *Dexterity views the progression of robots in levels of autonomy. The stages start at immobile pre-programmed robots, advance to immobile "smart" robots, then collaborating robots, human robots, and finally robots that design warehouse workflows.*

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## Point Solutions Are Short Term Winners in Brownfield and Greenfield Environments

- **Greenfield vs Brownfield** – Much of the talk at the conference among vendors centered around identifying if a deployment will be in a brownfield or greenfield environment. In a greenfield environment installations can be custom designed given “raw” space for new technology. In a brownfield environment installations are required to make use of the existing infrastructure within the facility. The majority of deployment opportunities for companies are brownfield given the existing facility footprint and will initially require a point solution.
- **Point Solutions aim to bridge the gap between legacy infrastructure systems and new technologies that increase efficiency** – Specific capabilities such as infrastructure-based vs infrastructure-less, ability to link directly vs using the cloud, and/or solutions that have several integration points are starting to become commonplace and easier for companies to choose, integrate and deploy.



*At the conference, OTTO motors shed light on how they model simulations in both greenfield and brownfield deployments to understand how robots will physically interact with the space and model for discrete events.*

*The Company partnered with materials handling specialists PULSE Integration (PULSE) to deliver the world's first large scale implementations of autonomous mobile robots for materials handling in manufacturing.*

*OTTO Materials Handling Platform provided the backbone of advanced manufacturing and eCommerce intralogistics at the client's sites, of which one was a brownfield and the other was a greenfield.*

*The brownfield deployment took place at an existing 700,000 square foot facility. Half of the facility was repurposed to exclusively use the AMRs for transport of raw material pallets, work in progress pallets, and finished goods pallets in place of forklifts.*

*In contrast, the greenfield deployment was deployed at a brand new facility. The AMRs were set up in a 400,000 square foot area where they were used to collect materials from human pickers and transport them to automated machining cells to perform autonomous collection of materials from the automated cells.*

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## Interoperability Standards Will Drive Merger Activity Over Time

- **Interoperability development allows AMRs of different types and vendors to standardize information sharing** - AMRs can share data about their location, speed, direction, health, tasking/availability, and other performance characteristics with different vehicles so they can better coexist on a warehouse or factory floor.
- **Standardization and information compatibility will drive consolidation across solutions** – Since these systems will already have inherent compatibility between fleets from different vendors there will be lower barriers and more acquisition synergies for companies with capital to acquire similar companies.



*FedEx, InOrbit, Vecna Robotics, and Siemens discussed the path forward for AMRs in the warehouse. Aaron Prather, Senior Technical Advisor at FedEx, mentioned that robots, serving various functions, have been rolled out across FedEx business units. The technology testing will include an interoperability test run by his unit and the MassRobotics Standard; all in partnership with Waypoint Robotics, Vecna Robotics, Siemens, Yaskawa, and the University of Memphis.*

Sources: Vox, OTTO Motors, Logistics Viewpoint

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## Software Connectivity and Data Cohesion in the Warehouse Will Drive Long-Term Success

- **Collective data learning loops will enable constant improvement across the warehouse** – AMRs use artificial intelligence for localization, navigation, and perception to travel through the warehouse along dynamic routes. As these robotic systems operate and collect data independently, they can also start to share learnings across the entire fleet through cloud-based platforms.
- **Centralized systems drive actionable insight** – Systems that can house all the data and apply learning algorithms from different software and hardware systems will capitalize on strategic insights to increase efficiency and throughput.

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## RaaS is Emerging as a Winning Business Model

- **The RaaS business model can become the simplest way for companies to deploy and provide consistent service for the robot** – Benefits to the RaaS model include a simplified return on investment (ROI), elastic consumption model, continuous software upgrades, higher quality equipment over time, intimate vendor support, and comparable consumption rates to manual labor. That said, there are also cons to the RaaS model because capital investment and depreciation is not an option, limited customization of a vehicle and/or payload, and as the customer, the equipment is not under direct ownership.
- **Larger companies start to adopt RaaS but there is room for the hybrid model** – We are seeing more customers like FedEx start to review vendors with the RaaS model. That said, there is still room for both business models on a hybrid basis since some solutions are better as a RaaS payment and others make more sense as a CapEx payment.



*Locus Robotics is an excellent example of a company that has developed an offering that reflects (i) full integration of software and hardware, (ii) a short- to medium-term readily deployable use case with a high performing solution and (iii) a technology roadmap that will evolve from point solution to a more comprehensive offering. Locus has been able to tailor its offering into an easily accessible and, therefore, market leading RaaS model allowing it to accelerate growth and value.*

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## Workforce Will Need to Evolve into Higher Level Management Jobs to Oversee Technology

- **Workers will need to keep pace and evolve** – Robots will change the day-to-day requirements of the facility-based labor. Instead of organizing, storing, and packing goods, workers will need to shift to managing robot fleets, designing and integrating technology installations, and providing intensified machine supervision.
- **Advancement creates both upside and downside** – Downside is caused by the pressure to perform tasks faster, heightened concern around data collection, and increased employee turnover due to burnout. The upside is career paths with increased skill sets involving managing robots, technical advancement, systems management, routine maintenance checks, and training with human guidance will be in increased demand and provide a natural evolution from the facility floor.



*Plus One's Erik Nieves discussed how robotic implementation will create career opportunities that will help streamline the operations in global industrial settings such as manufacturing sites and e-commerce sorting facilities, while putting human workers in more value-add positions.*

Sources: Robotics and Automation, Plus One Robotics, Results Engineering

# About Cascadia's Robotics, Automation, & AI Practice

## Cascadia | Leading Diversified Investment Bank

- Founded in 1999, Cascadia has a successful 20-year history
- M&A, private placements, advisory services
- Specialized in-depth expertise across multiple industry verticals

**70+** Investment Banking Professionals  
**OVER 415+** Completed Transactions  
**\$15.5 BILLION** Transactional Value



Mergers & Acquisitions



Debt & Equity Capital Raises



Strategic Advisory Services



Private Capital

## Cascadia | Dedicated Robotics, Automation, and AI Team

Cascadia Capital is one of the first investment banks in the country to have a dedicated practice group to serve emerging growth companies in Robotics, Automation and Artificial Intelligence ("RAAI"). Recognizing the myriad of industries that will be upended by RAAI technology in the coming decade, Cascadia's RAAI group will meet the growing demand for M&A and capital raising services in the market by tapping the firm's existing industry expertise.

## Cascadia | Select Robotics, Automation, and AI Team Information



**Michael Butler**  
 Chairman & CEO  
 MButler@cascadiacapital.com  
 (206) 436-2530



**Firdaus Pohowalla**  
 Managing Director  
 FPohowalla@cascadiacapital.com  
 (206) 436-2578



**Jamie Boyd**  
 Managing Director  
 JBoyd@cascadiacapital.com  
 (206) 436-2514



**Yee Lee**  
 Senior Vice President  
 Ylee@cascadiacapital.com  
 (206) 436-2544



**Jason Lippenberger**  
 Vice President  
 JLippenberger@cascadiacapital.com  
 (206) 436-2542

## Cascadia | Recent RAAI & Technology Transactions

**AIRWAY**  
 has been acquired by  
**TAKKION**  
 a portfolio company of funds managed by  
**APOLLO**  
 September 2021

**FLEXGEN**  
 has received a \$150 million equity commitment from funds managed by affiliates of  
**APOLLO**  
 August 2021

**KenSci**  
 has been acquired by  
**Tegria**  
 June 2021

**FragilePAK**  
 has been acquired by  
**GREENBRIAR EQUITY GROUP, L.P.**  
 May 2021

**cytozyme**  
 Technology Growers Trust  
 has been acquired by  
**VERDESIAN**  
 March 2021

**PowinEnergy**  
 has received a majority investment from  
**TRILANTIC CAPITAL PARTNERS NORTH AMERICA**  
 ENERGY IMPACT PARTNERS  
 March 2021

**deako LIGHTING**  
 has received an investment from  
**Kinetic VC Fund and corporate/private investors**  
 March 2021

**sonicboom**  
 has been acquired by  
**Premise Health**  
 February 2021

**mimic**  
 has been acquired by  
**surgicalscience**  
 January 2021

**PERFECT**  
 has received an equity investment from  
**Goldman Sachs**  
 December 2020

**RENEW ENERGY MAINTENANCE**  
 has been acquired by  
**TAKKION**  
 December 2020

**Lucidyne**  
 has been acquired by  
**MICROTEC**  
 April 2020

**RocketReach**  
 has received an investment from  
**BRIGHTON PARK CAPITAL**  
 August 2020

**Q2**  
 has received a growth equity investment from  
 A leading energy private equity firm  
 May 2019

For more information on this report or Cascadia Capital's RAAI coverage, please contact us or visit [cascadiacapital.com](http://cascadiacapital.com)