

AI/ROBOTICS FOR TLD PRODUCTIVITY IMPROVEMENTS



SEPTEMBER 2018 TECH BRIEF FOR THE TRANSPORTATION, LOGISTICS & DISTRIBUTION TALENT NETWORK

Shrinking Labor Market Accelerating Need for AI

Rapid decline of the labor pool presents a major challenge. Three factors contribute to today's [labor shortage](#):

1. An increasing need for more logistics workers, driven by e-commerce
2. Shrinking population levels in the active workforce demographic
3. Inefficiencies in remote and under-used locations, which leads back to inefficiencies in NJ.

Robotics and artificial intelligence (AI) can provide easily implementable and quickly deployed solutions to this logistics labor crisis worldwide. Challenges remain regarding software availability, customizability, and user requirements; ubiquitous availability of internet service access via 5G/Wi-Fi is also a requirement in more remote areas and must be addressed. But with the appetite for product availability to doorstep coupled with the demand for quick delivery, artificial intelligence and robotics remains a most promising solution to meet this ever-growing need.

Labor Force Takeaway

As with all technologies, the need for robotics is anticipated to grow exponentially in the near term. [Robots](#) working in warehouses will continue to increase along with robots in shipping terminals, on docks and platforms. Robots will need inventory, maintenance, management, and lifecycle updates/patches. The Technology Talent Network recommends the following certifications:

PC Age, as well as many local community colleges, offer [CompTIA A+, Network and Security certifications](#), all aimed at the IT beginner. Certifications cover software installation, maintenance and update, network access, security, and other IT fundamentals. CompTIA A+ educates to the level needed to run a network of endpoints and devices in a warehouse environment.

The [Cisco Certified Entry Network Technician](#) (CCENT) is the first step towards the CCNA (Certified Network Administrator) certification. It covers network fundamentals, basic security and wireless, routing, switching, and configuring, all key components of TLD platforms. CCENT is valued beyond logistics and distribution.

Major [manufacturers](#) in this space, including Honeywell, Fuji, Panasonic, TEKLYNX and Phillips, offer training modules covering specific implementations of their products.

Robotics Solve 21st Century Logistics Challenges

To address labor shortfalls, supply chain executives would normally have only the unenviable choices of raising costs or reducing services. A better alternative is now available: empowered robots equipped with artificial intelligence. Furthermore, logistics jobs have become less manual and more directive. Employees can now extend their careers to higher levels of responsibility and compensation.

Labor shortages are not all that is driving the push to robotics. Other elements of the supply chain are impacted based on consumer demand, Batch Size One and On Demand Delivery drive this trend.

Trends driving TLD providers to become faster and more flexible include consumer demand for:

- Highly personalized/customized products which is expected to drive distribution further out towards the end users. The application **Batch Size One** decentralizes production and rapidly changes supply chains.
- **On Demand Delivery** which requires extremely flexible last mile delivery, despite high set-up costs that discourages early adoption.

What kinds of AI powered robotics will be available to support the Transportation/Logistics and Distribution sector needs of **tomorrow**? Honeywell, in collaboration with Carnegie Mellon University, is using machine learning to enable robots to drive “critical decision-making capabilities, intelligent motion, collision avoidance and reliable sensing making it practical to deploy advanced robotics in dynamic, unpredictable environments.”

The **National Robotics Engineering Center** has also pioneered applications in many diverse sector areas, including, “...material handling, manufacturing, mining, agriculture, energy, defense and others. The organization has produced more than 650 inventions in over 20 years, with deep expertise in unmanned ground vehicles, autonomy, sensing and perception, machine learning, machine vision, operator assistance, 3D mapping and position estimation.”

So, what will deployed robotics do to change the logistics chain of the future? **DHL Trends** thinks they will improve by every measure. **Distribution facilities** will be scalable, flexible and faster. Higher productivity and increased quality/reliability will be evidenced. Disabled robots will be quickly reparable if they break down or need to be replaced with another unit from the robot fleet. Depending on the problem, robots can be fixed on site, or sent to a central repair facility. The new robot will be connected to the cloud, so it will automatically download the knowledge needed to take over from its decommissioned counterpart.

Warehouse workers will be given more responsibilities that require decision-making rather than repetitive tasks. Workers will be involved with managing operations, coordinating flows, fixing robots, and handling exceptions or difficult orders. Employees will train robots through simple interfaces to do easy and repetitive tasks, and humans will take on the more challenging work themselves.

Operations can expand to meet needs simply by adding more robots to cover peak times or to rebalance the distribution network. In addition, the emergence of a robot leasing, rental, and pre-owned robots will allow companies to reduce capital investments while further increasing operational flexibility.