



FEATURE

The journey toward a touchless network through intelligent automation

The future of movement of goods

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THE DELOITTE CONSUMER INDUSTRY CENTER

Intelligent automation helps companies utilize the right machine—or human—for work.

HUMANS HAVE LEVERAGED machines to create new efficiencies in their work for thousands of years. Even then, vehicles simply couldn't operate themselves until recently. Today, technology is driving the industry forward. As transportation advances toward the future of movement of goods, companies will likely need vehicles that can operate themselves. It is here that our third pillar—*intelligent automation*—helps players reach their next crossroads.

Simply put, optimizing resources to achieve greater efficiencies is what intelligent automation is all about. Doing so entails transportation organizations leveraging their human capital and technology, machines, and equipment resources in new ways.

The case of Hillwood's Mobility Innovation Zone (MIZ) in AllianceTexas can help illustrate the value of this pillar. MIZ was built to test and scale mobility technologies and solutions that are the heart of intelligent automation, such as automated freight and unmanned aerial systems (UAS) goods movement. The benefits are apparent. By automating freight, companies can address driver shortages in the United States (over 60,000 in 2018 and expected to grow to 160,000 by 2028).¹ Automatic freight can also reduce costs. Driving labor expenses are the largest cost for trucking companies and make up approximately 28%–50% of revenue.² Companies are also exploring UAS to expand and transform delivery and transportation of goods beyond human limitations.

In our first two articles, we defined the initial steps companies should take on their journey toward a [more connected movement of goods community](#) and how [holistic decision-making](#) is helping

companies digitalize their physical world. In this article, we describe how *intelligent automation* can help power a new reality of autonomous trucks and ships, automated digital fulfillment centers, and last-mile delivery drones and droids. Together, the three interconnected pillars can help drive the future of the transportation ecosystem. While many organizations are advancing in connected community (49% of respondents are actively pursuing strategies related to this pillar) followed by holistic decision-making (39%), intelligent automation is taking more time to implement due to its inherent complexities (35%).

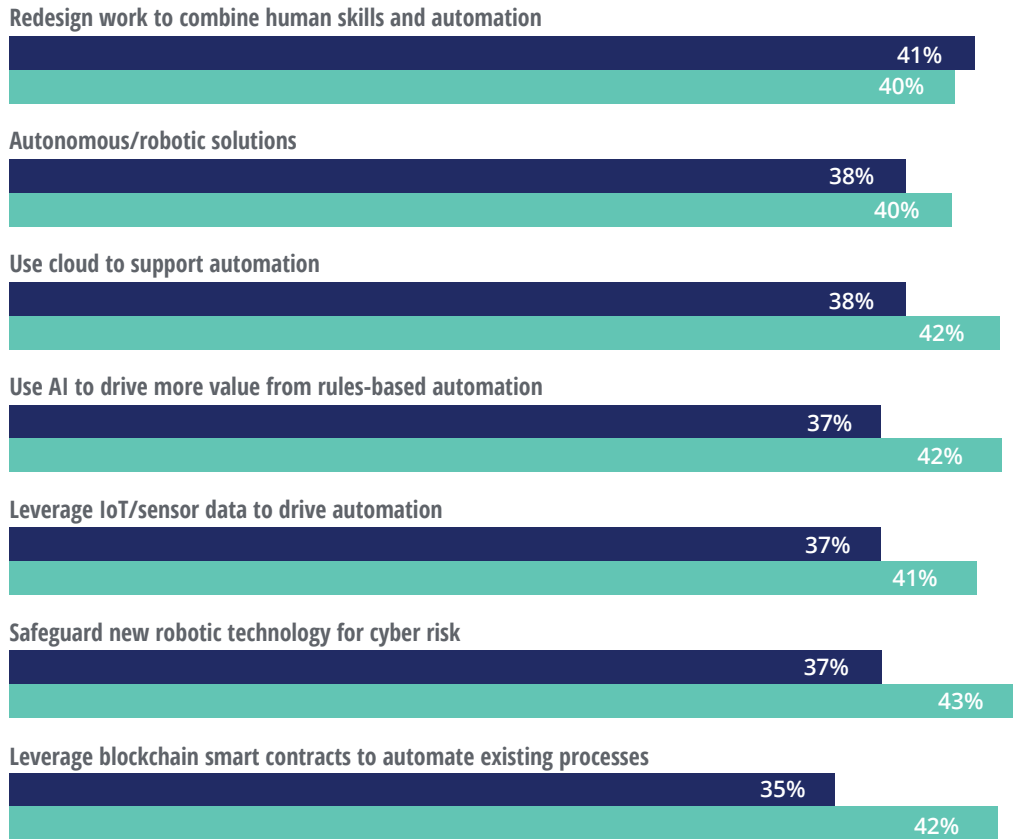
By automating freight, companies can address driver shortages in the United States (over 60,000 in 2018 and expected to grow to 160,000 by 2028).

The journey toward a truly touchless movement of goods network will take time, digital and physical resources as well as a commitment from organizations along the transportation supply chain. Figure 1 shows that players are looking to invest across all types of intelligent automation activities. To that end, we grouped investments into three critical success factors: playing to win in a global, touchless network; reimagining the role of human and machine; and applying smarter automation (figure 2). Measuring success will likely require leaps in adoption of new technologies that should run parallel to advances in human capital.

FIGURE 1

Investments in intelligent automation

■ Actively using/piloting ■ Plan to invest in the future



Note: N=170.

Source: Deloitte Future of the Movement of Goods Survey.

Play to win in a global, touchless network

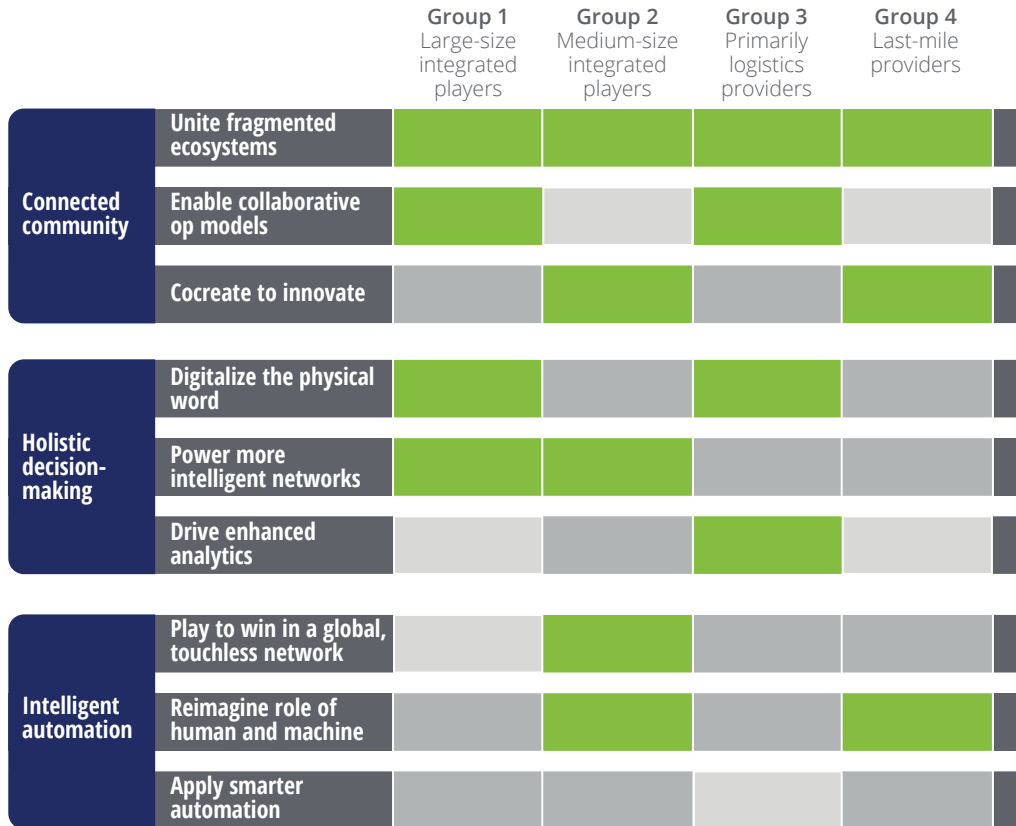
Now is the time for companies to envision and embrace their future in a global, touchless network. While the sector is potentially years away from becoming fully touchless, the foundations are actively forming today. Evidence of maturing automation can be found in all stages of the movement of goods value chain. Clearly, different segments of the supply chain are prioritizing investments in different types of autonomous transportation and robotics. We also found that different segments are adopting autonomy at

different paces: 50% of large integrated players are investing in autonomous and robotic solutions, but this number drops to 32% for last-mile providers. Logistics providers are primarily investing in warehouse robotics, warehouse drones, and port robotics. Warehouse robotics is leading in adoption by those actively investing in autonomous solutions while there are far fewer last-mile delivery droids (figure 3). For example, in warehouse robotics, Ocado, a leading technology business providing online grocery solutions for global retailers, can process 3.5 million items per week in highly automated warehouses that work around the clock.³ And last-mile automation efforts,

FIGURE 2

Prioritization of success factors to help organizations succeed

■ High ■ Medium ■ Low



Group 1: Large companies (>US\$10B of revenue + >20% of market share) that offer land transportation and air cargo.
Group 2: Medium-sized companies (>US\$10B of revenue + <20% of market share) that offer land transportation and ocean.
Group 3: Small companies (<US\$10B of revenue) that primarily offer logistic services such as 3PL/4PL and freight forwarding.
Group 4: Companies that offer last-mile delivery of packages either directly or via a network of local, nonprofessional couriers.

Notes: High—To be prioritized within next six months; Medium—To be prioritized between six and 12 months; Low—To be prioritized after 12 months.

Source: Deloitte analysis.

from drones to droids, are transitioning from proofs of concepts to pilots. For example, Flytrex, an on-demand drone delivery startup, delivers packages in Iceland.⁴ And some grocers deliver fresh produce in Arizona using autonomous delivery vehicles.⁵

Capturing the touchless network’s full potential could take years. It will likely require significant investments in logistics and changes to how the

industry works (e.g., new infrastructure, wider network connectivity, and jurisdictional decisions).

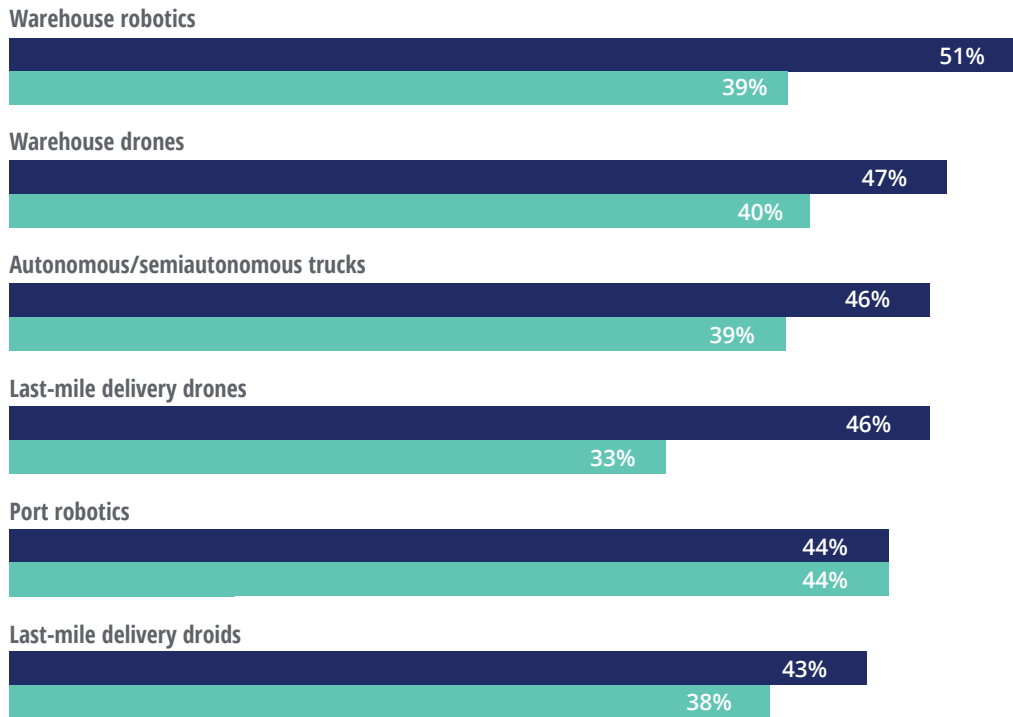
There are plenty of examples today. Companies such as Uber are testing the advantages of fully autonomous and semiautonomous vehicles. Autonomous cargo ships are under development, and some ports already feature fully robotic ship offloading processes.⁶ Nearly 50 companies are progressing on autonomous vehicles (AV)

FIGURE 3

Autonomous transportation and robotics

Among survey respondents actively investing in/piloting autonomous/robotic solutions

■ Actively using/piloting ■ Plan to invest in the future



Note: N=65.

Source: Deloitte Future of the Movement of Goods Survey.

technology, and many, such as Daimler and Waymo, are focusing efforts on trucking.⁷ Warehouse robotics that lift, move, and sort are widely in use and continuously improving.

Many companies today are trying to create remote workloads to provide similar services using a touchless networks. For example, UPS has “announced a groundbreaking new logistics service to deliver medical samples via unmanned drones through a collaboration with Matternet.” The service transitions delivery from courier cars to drones, which “provides an option for on-demand and same-day delivery, the ability to avoid roadway delays, increase medical delivery efficiency, lower

costs, and improve the patient experience with potentially life-saving benefits.”⁸

In the end, the foundations of a global, touchless supply chain are actively forming today. And the evidence for maturing automation can be found across the value chain.

Reimagining the roles of humans and machines in the future of work

The increasing power and capability of machines will ultimately transform work and change the requirements for skills and roles that shipping and

transportation providers seek. Executives will likely find themselves deciding aspects of the work that need to be automated and those that should remain innately human. They should redesign roles and teams to leverage the best of technology and the worker. And as companies prepare for the future, talent models and skill sets should evolve to address the accelerating integration of technology in the workplace.

At Deloitte, we call this [The Future of Work](#). As companies are increasingly reimagining the roles and capabilities of both humans and machines, businesses should plan for these future skill requirements, assess the evolution of existing roles, and the applicability/emergence of new, value-added roles. In fact, 81% of our survey respondents report actively redesigning work (or planning to do so in the future) to more effectively harmonize machine and human strengths.

Of course, some roles may be relatively simple to predict, such as training workers to use advanced technologies to augment and assist with processes that are methodical (e.g., spend analytics and

reporting, and invoice processing). Others will likely be entirely new—taking advantage of the unique skills that only humans possess (i.e., intuition, judgment, creativity, persuasion, and problem-solving). While some work can be fully automated, we are seeing early signs (e.g., the fusion of facial and voice recognition technology in advanced robotics) that suggest a future of close human-robot collaboration and automation of niche processes in existing human jobs.

Our research revealed that companies are more willing to invest in work redesign within segments that feel greater impacts of robotic and autonomous technologies (figure 4). It is worth noting that within the transportation ecosystem, top segments such as retailers and manufacturers are 15% more likely to invest in work redesign than bottom segments, such as trucking, ocean, and rail.

After all, the future of work encompasses changes in work, the workforce—and the workplace. First, organizations should understand what aspects of work can be automated, taking into consideration contractual obligations between trading partners.

FIGURE 4

Where data and analytics are driving value: Looking to the future of work

■ Percentage of respondents actively redesigning work, by segment



Note: N=170.

Source: Deloitte Future of the Movement of Goods Survey.

Second, organizations should leverage the continuum of talent (traditional full-time employees, managed services and outsourcing, contractors, gig workers, etc.) to delineate tasks associated with each type of talent to optimize organizational benefits. And finally, with new combinations of collaborative, teaming, and digital reality technologies, organizations should rethink how the workplace is reshaping where and when work is done, and fostering culture and team connections to maximize innovation and business results.

Shifting from process automation to smarter automation

Across the movement of goods value chain, “automation” is usually synonymous with robotic process automation or digital bots that perform repetitive tasks to create efficiencies and reduce costs. Approximately 80% of those surveyed leverage or plan to leverage process robotics to automate repetitive digital tasks.

Artificial intelligence (AI), for example, is helping to drive more value from rules-based automation. Among survey respondents, 78% use AI to drive more value from rules-based automation (or are planning to do so in the future). Among manufacturers, this figure jumps to 93%. For example, Walmart and Procter & Gamble have collaborated to create an automated re-ordering system. Walmart utilizes satellite communications, which are then sent to Procter & Gamble whenever an item is needed. Procter & Gamble then fulfills the order and delivers the item. This helps Walmart form more accurate forecasts and react more efficiently to customer needs.⁹

Companies can utilize AI for new automations wherever they have role-based manual processes. Employees can leverage the cloud to support automation of workflows and then leverage

blockchain smart contracts to automate the process across different stakeholders. Blockchain, however, is still lagging, with only 35% of respondents noting that they leverage blockchain smart contracts to automate existing processes. For example, Coca-Cola adopted an enterprise Ethereum blockchain platform to streamline the interactions between franchised bottling companies to make cross-organization supply chain transactions more efficient.¹⁰

As the holistic decision-making pillar aligns with intelligent automation, the power of automation can be applied to high-value decision-making tasks—shifting the automation application from “cheaper” to “smarter.” Businesses thriving in this rapidly evolving environment will likely increasingly feed cognitive technologies and predictive insights into a growing robotic network (both digital and physical). This can create intelligent supply chain solutions that can not only identify potential bottlenecks, but also circumvent them altogether. Organizations following this path should align on several important steps, including implementing AI to drive more value from rules-based automation, integrating cloud applications to support the growing automation of workflows, and adopting process robotics to automate repetitive digital tasks.

Conclusion: Utilizing the right human or machine for work

Our survey data reveals that the intelligent automation pillar, albeit lagging in adoption currently, is attracting the most investments. Approximately 43% of respondents are planning to implement intelligent automation capabilities over the next year, compared to 35% for connected community, and 40% for holistic decision-making. The lead time for intelligent automation, as compared to the other two pillars, can be protracted. Therefore, we believe the industry

today is far from mature when it comes to the future of movement of goods.

Maximizing the potential of intelligent automation to take full advantage of a constant flow will likely require organizations to change their existing logistics systems to maximize the value that comes from a touchless network, enhance their operating models to delineate between internal talent and machines, and feed cognitive technologies and predictive insights into the robotic network. The increasing power and capability of machines can ultimately transform work, evolving skills and roles required from employees.

Evolutionary changes that we are seeing in the movement of goods may not happen overnight. But as the Hillwood case demonstrates, a change is coming, and organizations should not only have an awareness of success factors that make up intelligent automation, but also should strive to

embrace them. The future of movement of goods might be coming faster than we once envisioned.

FIVE STEPS TO LEVERAGING INTELLIGENT AUTOMATION

1. Reimagine your organization's logistics systems to maximize the potential of a touchless network
2. Use cloud-based applications to support the automation of digital workflows
3. Feed cognitive technologies and predictive insights into your robotic network to turn physical events into real-time data needed for automation
4. Redesign work to combine the strengths of human skills and automation
5. Leverage process robotics to automate repetitive digital tasks

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