THE TECTONIC SHIFTS THAT ARE RESHAPING THE T&L INDUSTRY.

Transformational technologies are ushering in a new era for transportation and logistics (T&L).

Honeywell

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A CHANGING MARKET ENVIRONMENT.

Digital transformation affects every industry across the globe, and the T&L is no exception. According to a recent Forbes Insights survey, 65 percent of senior transportation–focused executives think tectonic shifts in this industry are driving an era of profound transformation.[1]

The pace of change is relentless, and a lot of T&L companies are having a hard time keeping up. Nearly two-thirds of T&L executives say it's becoming increasingly difficult to keep up with the advances in technology, demographics and the competitive environment.[1] And it's no wonder, considering new technologies are appearing every other day.

Early adopters of technological advances are gaining a competitive edge, and top-level management is taking notice. Studies show that over half of T&L executives fear their competitors are already moving significantly faster amid disruption in T&L.[2]

IoT, artificial intelligence and machine learning, among others, are hailed as the transformational forces behind the transition from T&L's traditional mode of operation to the modern, automated way. These technologies are making good on the promise of delivering a dynamic and integrated demand forecast and fully optimized order fulfillment.

The "Online Shopping Effect," rising consumer expectations and the move toward digitally connected supply chains are also reshaping the way T&Ls are operating, and will play a significant role in the future of the industry. As consumers' demands constantly evolve, transportation and logistics operations are being put under growing pressure to offer more efficient delivery services, while not compromising on customer service.

[1,2]http://info.forbes.com/rs/790-SNV-353/images/Penske_REPORT-FINAL-DIGITAL.pdf

THE "ONLINE SHOPPING EFFECT" AND RISING CONSUMER EXPECTATIONS.

> Competition between brick and mortar companies and internet-based competitors continues to grow and raise the stakes.

The "Online Shopping Effect" describes the disruption of the retail market due to the increase in e-commerce, in large part due to the influence of Amazon. Amazon's vast selection of goods, fast shipping, free returns and low prices has become a standard that customers hold retailers to.

Amazon has transformed the market, changing the way that consumers think about choice, convenience and price. With the proliferation of e-commerce, consumers are able to find whatever they want, whenever they want, and to place their order and then receive it in a one- or two-day period.

"The effect of Amazon is heightened expectations. Next week is no longer good enough. It's got to be on its way now and arrive at the destination within a day or two," opined C. John Langley, Clinical Professor of Supply Chain Management and Director of Development for the Center for Supply Chain Research, Penn State Smeal College of Business.[3]

Moreover, Amazon is setting the bar for fast delivery at discounted rates or for free. To capitalize on consumers' demand for same-day delivery services, T&L operations need to be as adaptable as possible, in order to give consumers more control and flexibility over their deliveries.[4]

"The Online Shopping Effect" is also redefining the final mile in delivery. In the past, loads saw a maximum of four touchpoints before the goods reached the end consumer. Today, getting goods to consumers in record time means seven, eight or nine touchpoints moving the freight to a network of warehouses and forward positions.[5] Consequently, T&L companies need to be able to manage a much more complexity in shorter lengths of time.

Additionally, access to a diverse menu of products available online and visibility of order fulfillment have become important features for consumers. This includes knowing if a product is in stock, tracking, returns and even being able to interact with the delivery on the last mile, all of which were unheard of just over a decade ago.

[3]https://www.shipware.com/what-the-amazon-effect-means-for-the-shipping-industry/
[4]https://aidc.honeywell.com/CatalogDocuments/delivering-on-tl-transportation-logistics-research-paper.pdf
[5]http://info.forbes.com/rs/790-SNV-353/images/Penske_REPORT-FINAL-DIGITAL.pdf

TRANSFORMATIONAL TECHNOLOGIES
IN TRANSPORTATION AND LOGISTICS.

> Digitalization in T&L has become such a widespread phenomenon that it's almost impossible not to notice its effects. Fifty percent of respondents in a recent study claim that advancements in technologies are exerting a strong impact on their company's logistics, supply chain and transportation operations.[6]

The massive proliferation of business data extracted from IoT and further enhanced by machine learning and artificial intelligence is opening new dimensions for data analysis.

Other factors of change include advances in drones, driver safety technology, driverless vehicles and blockchain. "Digital fitness" will become a prerequisite for the success of logistic companies: the winners will be those who understand how to exploit a whole range of new technologies.[7]

[6] http://info.forbes.com/rs/790-SNV-353/images/Penske_REPORT-FINAL-DIGITAL.pdf
[7] https://www.pwc.com/gx/en/transportation-logistics/pdf/the-future-of-the-logistics-industry.pdf

IoT:
THE INTERNET OF THINGS.

With IoT, the ability to capture information and filter it all back to your database provides you with the visibility you need in real time to make smarter, faster, data-driven decisions. Mobile technologies helping harness IoT data for T&L companies include RFID tags, readers, handheld devices, scanners and mobile computers that are working together to maximize supply chain efficiency.

THE FUTURE OF IoT AND T&L, IN NUMBERS

Big data will become a defining force in the future of logistics, but the benefits of big data are already being felt.

4 out of 5 **industry professionals** believe the greatest value from digitization will be in fleet management, especially in routing optimization[8]

86 percent **of companies** will significantly increase their IoT budget in the next 1-2 years[9]

By 2026 **the IoT and telematics market** is expected to be $10.9 billion, with software representing nearly $8.7 billion[10]

23.14 billion **IoT-connected devices are currently online,** a number which is only expected to increase[11]

When implemented at the enterprise level, big data is known to deliver:

- Better shipping options
- Reduced operational costs
- Predictive operations
- Fewer errors in delivery and pickup

When leveraged, IoT could impact the supply chain in significant areas such as:

- Real-time route optimization
- Crowd-based pickup and delivery
- Customer loyalty management
- Environmental intelligence
- Address verification
- Risk evaluation and resilience planning

[8,10]http://info.forbes.com/rs/790-SNV-353/images/Penske_REPORT-FINAL-DIGITAL.pdf
[9]https://www.abr.com/iot-transform-supply-chain/#_ftn1
[11]https://www.statista.com/statistics/471264/iot-number-of-connected-devices-worldwide/

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING.

Artificial intelligence and machine learning enable leaders in logistics, supply chain and transportation to focus IoT and other data feeds across their enterprise, using them to make more effective decisions.

Leading T&L companies are already harnessing the power of artificial intelligence and machine learning to inform and fine-tune core strategies like warehouse locations, and to enhance real-time decision making. The transportation industry has been capturing data for years, but these technologies encourage making data-driven decisions on issues like availability, costs, inventories, carriers, vehicles and personnel.

For example, optimal carrier selection — combing through thousands of possible candidates, routes and schedules —can take four to five minutes to reach a conclusion. With AI and ML tools, companies can narrow the selections to just two or three within a matter of seconds, then allow human intuition to make the best decision, saving valuable time and money.[12]

Predictive analytics helps sales teams understand when customers will be ready to reorder and helps determine when a vehicle might need preventative maintenance — avoiding breakdowns and reducing the risk of failing to meet customer needs and expectations.

[12]http://info.forbes.com/rs/790-SNV-353/images/Penske_REPORT-FINAL-DIGITAL.pdf

AUTONOMOUS VEHICLES AND DRONES.

> Regulations that limit drivers' hours on the road are no longer a concern when talking about autonomous vehicles and drones. Instead, concerns focus on fuel efficiency and range capability, since trucks will be able to embark on longer journeys and drive continuously at all hours.

New market entrants are already testing long-haul robotic trucks in U.S. states like Arizona, California, Florida and Texas.

These autonomous vehicles will need logistics and service nodes that best capture their new efficiencies. As they become more and more electric and "green," unmanned trucks will require servicing stations that provide rapid recharging facilities as well as service and maintenance.

Meanwhile, Amazon has already demonstrated its first actual drone delivery. According to the "Washington Post," CEO Jeff Bezos tweeted that "the box arrived 13 minutes after the order was placed."[13]

Amazon's goal for their drone delivery service is to create "fully electric drones that can fly up to 15 miles and deliver packages under five pounds to customers in less than 30 minutes."[14]

UPS, Google and AHA, Iceland's largest online marketplace, are all experimenting with drone delivery for good reason. Drone delivery could reduce the delivery time for customers as well as the environmental impact of home delivery. Though more research is needed, initial studies show drones could consume less energy per package than delivery trucks.[15]

Drones can also be used for supply-chain deliveries. Drones can be used to ship inventory between production facilities and distribution centers, potentially expediting order fulfillment.[16]

These technological marvels evolve every day; their developers insist that they carry the potential to broadly automate transportation in the very near future.

[13] http://info.forbes.com/rs/790-SNV-353/images/Penske_REPORT-FINAL-DIGITAL.pdf
[14] https://www.theverge.com/2019/6/5/18654044/amazon-prime-air-delivery-drone-new-design-safety-transforming-flight-video
[15] https://www.forbes.com/sites/ericmack/2018/02/13/delivery-drones-amazon-energy-efficient-reduce-climate-change-pollution/#64baf9856a87
[16] https://www.americanexpress.com/us/foreign-exchange/articles/drones-impact-supply-chain-management/

BLOCKCHAIN
TECHNOLOGY.

> Blockchain is a technology ideally suited to the T&L industry that has the potential to become transformational. In addition to being a ledger, blockchain allows shippers and carriers to work together with smart contracts. The use of smart contracts enables faster and more efficient approvals and customs clearance, reducing processing times for goods at custom checkpoints.[17]

Having trustworthy data across the entire transportation and logistics ecosystem — since the entire network contributes to data validation — is another important Blockchain feature that is highly beneficial to the T&L industry.

Traditional tracking technologies are hard to scale, and this is becoming a problem because of the rising demand for same-day delivery. Blockchain technology might become a viable alternative, as it provides a scalable, immediate solution for order tracking and authentication.[18]

Businesses such as Walmart are investing in solutions designed to shore up food safety standards. Walmart's solution will mean that anyone involved in the supply of products will be able to trace each item back to the farm where it was grown, using a tamper-proof distributed database. Amazon has announced two blockchain initiatives for this year that aim to enable its AWS customers to take advantage of distributed ledger technology in their own projects. Forbes predicts we will see more mature endeavors in the blockchain arena in the near future.

Additionally, the trend of using blockchain technology to secure data and devices in the internet of things is expected to grow this year. As the number of connected devices continues to grow, experts predict that blockchains will increasingly be used to log and monitor these communications and transactions.[19]

It is predicated that Blockchain as a Service (BaaS) will increase adoption across businesses in the next year. BaaS is an offering that allows customers to leverage cloud-based solutions to build, host and use their own blockchain apps, smart contracts and functions on the blockchain. A cloud-based service provider manages all the necessary tasks and activities to keep the infrastructure agile and operational.[20]

[17, 18]https://assets.website-files.com/5891efd0cc115cf202136da4/5c01b149f51059400ebdbb8b_winnesota_blockchain_infographic.png
[19]https://thefintechtimes.com/blockchain-trends-2019/
[20]https://www.forbes.com/sites/bernardmarr/2019/01/28/5-blockchain-trends-everyone-should-know-about/#2ca3f79c3bb9)

WINDOWS OPERATING SYSTEM END OF LIFE.

In less than 5 months, Microsoft will no longer support Windows Embedded Handheld OS.

The approaching Windows end-of-life deadline could signal disruptions for those businesses that have postponed the decision to migrate to a new mobile operating system.

More than 50 percent of decision makers say they'll remain on Windows or are still evaluating their options, according to a recent enterprise mobile study.[21] In other words, companies will be using software that's no longer supported after January 2020. This could result in a surge in compromised data.

On January 14, 2020, Microsoft will stop supporting Windows Embedded Handheld 6.5.

That means:

- No security updates

- Not running latest operating system

- No technical support

- No Long Term Evolution (LTE) data coverage

- Bad user experience

With Windows no longer a viable option for many companies, Android is emerging as the top contender for an OS suited for the rugged environments T&L companies operate in.

This digital shift is particularly important for T&L managers to understand and act upon quickly given the lack of time available to switch to Android and protect their company from vulnerabilities.

Transitioning to a new operating system may seem like a daunting task, but you don't need to make the transition by yourself. Choosing a partner with deep security expertise can help you get things up and running in no time.

Honeywell has a deep institutional and cultural focus on security across multiple domains. We invest in excess of $50 million annually in cybersecurity and employ 300+ dedicated security professionals who are focused on protecting our customers.

Honeywell's products are secure by design, informed by intelligence and defended with vigilance so you can feel confident that your applications, network, data storage and your operating systems are protected.

Read our eBook to learn more about the Windows Embedded Handheld OS end of life and how you can prepare.

[21]https://www.abr.com/2019trends/

THE FUTURE OF T&L TECHNOLOGY: THE CONNECTED SUPPLY CHAIN.

The global population is expected to increase from 7.4 billion to 10.6 billion by 2050.[22] One of the first areas that will be impacted by these numbers is the shipping industry, where the volume of goods shipped will quadruple by 2050.[23]

But it's not just the population increase that's driving this surge. The increase in the volume of goods is also driven by urbanization, increases in disposable income and internet penetration, and ease of access to new technologies.[24]

To keep up with these changes, established companies and a host of new entrants are shifting their business model by harnessing the latest technology innovations. Integration across the value chain, both horizontal and vertical, and networks that are real-time optimized will become the norm.

Things are already starting to move in that direction. Today's supply chains, for example, are more digitally interlinked than ever before. IoT-connected devices, RFID chips, GPS tracking and other innovations are just a few of the technological advances connecting supply chains.

Companies need to be in permanent contact with their trading partner networks to achieve greater supply-chain visibility and efficiency. Mobile devices will continue to play an important role in the digital transformation of the entire supply chain — providing an instant line of communication at every intersection between the workers and the goods they are moving.

And this is just the beginning. In the near future, companies will also need to prepare for experimental technologies like augmented or virtual reality, 3-D printing, robotics, etc.

[22,23,24] https://www.ey.com/en_gl/automotive-transportation/how-transportation-and-logistics-can-position-itself-in-a-new-world

HONEYWELL:
THE RIGHT PARTNER FOR YOUR SUCCESS.

For the transportation and logistics industry, this is an era of profound transformation.

Those who manage transportation needs must begin to rethink everything: warehouse locations, logistics technologies, and fleet and carrier strategies.

Advancements in technology can be overwhelming, but Honeywell is the partner to help you make sense of it all. We'll help you make smart decisions, based on facts, not intuition, and find the best solutions to fit your organization's needs.

To navigate this complex landscape, you need a business partner with deep domain expertise and the ability to connect data and insights to solve problems and develop better outcomes.

Customers all over the world have taken their business to the next level through a partnership with Honeywell. Learn more at honeywellaidc.com or call a knowledgeable representative at 1-800-934-3163.

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