



The Digital Control Tower Imperative

How the evolution of the digital landscape drives incremental value for early adopters and redefines business models

As the global population increases from 7.6 billion to an estimated 9.8 billion by 2050¹, the volume of goods shipped is expected to quadruple. This increase in shipping volume will likely be driven by urbanization (two-thirds of the global population is expected to live in cities²), an increase in disposable income, and growth in internet penetration and ease of use by 2050 compared to today's levels.³ With current fulfillment costs already high, rising shipping volumes will increase supply chain complexity and drive costs higher.

How can the supply chain industry be ready to meet these future challenges? Are the current processes and systems adequate to address the complexity of global supply chains? Are they optimal and sustainable? Unfortunately, not yet. Companies need more interconnected systems, functions and processes that enable them to share actionable insights in near real-time. In the future, companies may also take advantage of digital control tower capabilities, such as intelligent supply chain bots, that proactively and autonomously take action to predict and prevent supply chain disruptions.

Digital and emerging technologies such as machine learning are poised to dramatically change the supply chain industry. Sixty-six percent of supply chain leaders state that advanced supply chain analytics are critically important to supply chain operations in the next two to three years.⁶ In order to take advantage of the benefits of machine learning and other types of artificial intelligence (AI), companies need technology that not only gathers raw data, but also converts it into actionable information.

The “ignore it” approach

Across all business models, one tenet holds true: the more you understand your customers, the better equipped you will be to serve their needs. The ability to gather data and insights about customer behavior has become much easier due to the availability and affordability of cloud computing capacity. As a result, the amount of data available for mining and advanced analytics has grown exponentially in recent years. In addition to

traditional transactional data, companies can harness many new data sources to provide context on environmental factors that impact their supply chains. These sources include digital signals related to the running temperature and speed of mechanical equipment; readily available big data such as social, news, events and weather; and even real-time feedback on traffic congestion or shipment progress.

Leveraging this data to learn from historical performance and more accurately predict the impacts of what has previously been considered unpredictable drives much excitement, and opportunity, within the supply chain industry. The ability to identify data-driven correlations of cause and effect, as well as potential disruptions to the supply chain plan, will enable companies to assess potential responses and likely outcomes. They can then implement recommendations to reduce or eliminate those disruptions. The incorporation of advanced analytics and machine learning into supply chain planning and execution will accelerate these assessments and empower organizations to be proactive instead of reactive in the face of disruptions. This is the promise of the digital supply chain: the application of advanced analytics and machine learning to the supply chain will improve performance, leading to maximum customer satisfaction and corporate profitability.

When coupled with the pervasive disruptions that impact retailers, third-party logistics providers, distributors and manufacturers, supply chain digitalization has changed how companies focus on their core capabilities and collaborate with others. Digitalization enables them to bring their products

and services more efficiently and profitably to market. At the center of this transformation is the digital supply chain, in which a comprehensive data repository and digital control tower provide the visibility, control and orchestration necessary to sense, plan, execute and learn from structured and unstructured data.

The digital supply chain

There are many providers that claim ownership of the digital supply chain, and many have worked on associated capabilities for several years. Few, however, are positioned to deliver the full promise of the digital landscape, as their offerings are limited to components. For organizations evaluating their digitalization roadmap, which critical components and features comprise the digital supply chain?

- **Real-time visibility.** An understanding of real-time inventory positions, order statuses and resource availability is critical in order to remove constraints from dynamic response options. As such, this visibility is a cornerstone of any digital supply chain. Visibility can also be considered in the context of collaboration across departments or even organizations. Providing consistent information in real-time, and allowing internal and external partners' access to update assumptions, is critical.
- **Predictive insights and recommendations.** Historical data, coupled with big data, can be leveraged to provide predictive insights and recommendations, a core capability of any true digital supply chain. Providers that embrace advanced simulation capabilities, enabled by machine learning, will quickly outpace any competitors as they benefit from the accuracy of both the predictions and the dynamic response recommendations that result.
- **Orchestration.** Operational dashboards and pre-emptive alerts can also be instrumental in the management of recognized and likely disruptions. The coordination of a response in a manual environment, however, requires pivoting across applications and will likely result in missed opportunities. This is why the underlying applications that manage supply chain planning and execution are critical. Real-time orchestration must occur, which means the digital supply chain must be interoperable

with those applications. While public communications based on application program interfaces (APIs) will facilitate integration, those providers that offer both the underlying applications and the orchestration layer will clearly operate from a holistic view. This means they will be able to maintain those connections as technology advances. This is where the digital control tower comes into play.

The digital control tower

Supply chain digitalization makes it possible for companies to holistically and repeatedly evaluate all relevant information, which means they can iteratively improve their supply chains and dynamically respond to likely disruptions with balanced plan revisions. The digital control tower sits at the heart of the supply chain ecosystem, facilitating the sharing of information as well as the automation of the response and optimization mechanisms. To succeed in this role, a digital control tower must have the following capabilities:

- Provide visibility across business units, geographies and functions, enabled by digital technologies such as blockchain and Internet of Things (IoT)
- Enable collaboration among internal and external stakeholders in real-time for superior visibility
- Ingest big data and make suggestions, or initiate remedial actions, based on near real-time information
- Enable cognitive planning and positioning of assets for peak seasons
- Provide intelligent asset maintenance and tracking
- Convert raw data into meaningful insights for proactive decision-making
- Provide enhanced actionable data analytics for carriers, vendors and suppliers
- Enable self-corrective action that improves turnaround time

How digital transformation can help your business

Traditional sales channels continue to evolve as e-commerce resets consumer expectations. With service-level acceleration, increased direct-to-consumer deliveries, and urbanization of the workforce and transportation landscape, organizations increasingly rely on their partners to ensure that product availability meets their customers' expectations. By proactively relying on a broader network to signal potential disruptions, companies are empowered to respond to the customer in a more transparent manner.

In the future, these partner relationships will become even more important as the costs associated with returns management increase. Today, cash-to-carry cycle time is an average of 45 days, with inventory turns for finished goods averaging 10 days.⁷ Increasing visibility into end-to-end functions across various partners will result in a more resilient and leaner supply chain.

As the ongoing trend toward collaboration accelerates, the digital landscape will deliver both the ability to share information more aggressively across organizations, as well as the ability to orchestrate a more dynamic response. Consider the potential benefits of the following examples. A logistics services provider, who specializes in visibility of traffic and port congestion, leverages that data to provide improved component availability to a manufacturer, or product availability

to a retailer. A retailer promotes endless aisle inventory, using local distributors to supplement its resources and drop-ship products that would be burdensome to carry in stores.

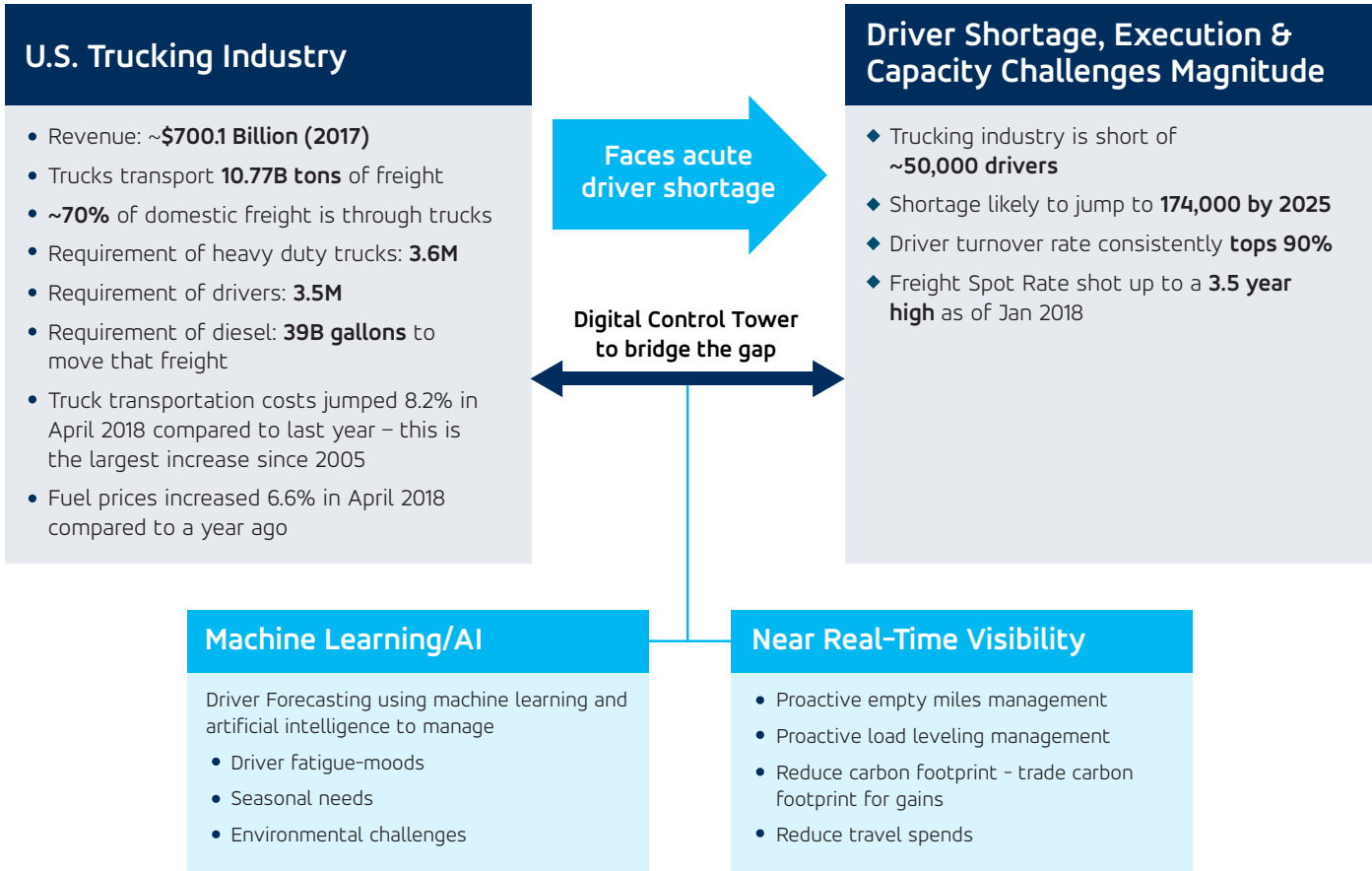
The diagram on the following page provides an even closer look at how AI and machine learning have the potential to unlock trucking capacity and improve transportation efficiency.

Increasingly, these opportunities drive organizations' strategic focus and business models as they prompt companies to evolve their core competencies. For those organizations striving to assume the leadership mantle in the digital economy, charting a course for sustained growth and profitability in light of these technological transformations will be critical.

Defining your technology strategy

Defining a digital control tower technology strategy is a key component of any digital supply chain initiative. Supply chain systems are distributed and based on different technology stacks, along with different platforms like cloud and on-premise. In addition to the architectural components, many supply chain organizations have already started using digital technology components like IoT, AI and analytics to automate their supply chains. Within the supply chain ecosystem, digitalization already provides inbound and outbound logistics visibility, collaborative order management, inventory visibility and management, collaborative supply and demand planning capabilities, and much more.





Source: EY Digital Supply Chain Approach

The continuing growth of digitalization means technological advancements will continue to accelerate. Consider the following catalysts⁸:

- 99% of all devices that may join the network someday are still unconnected.
- 36% of organizations are unlikely to detect a sophisticated cyberattack.
- 81% of senior executives agree that data should be at the heart of all decision-making.

The process of implementing a digital control tower begins with mutually agreed-upon functionality within the supply chain and basic data-sharing among partners to support real-time execution. It then evolves into a network-of-network platform that tracks and improves the functionality of all products across the end-to-end supply chain. Over time, the network enables:

- Superior visibility
- Actionable insights
- Dynamic decision-making

The final element of a digital control tower is an automated response capability. While early recommendations may be manually implemented, dashboards will evolve to allow the execution of recommended responses. This reflects a continuously advancing transition to an autonomous supply chain. Machine learning will increasingly recognize disruptions and calculate the likelihood or confidence of potential solutions to resolve the plan. This will open the door for set confidence intervals to allow an automated response. As these confidence intervals become wider with improved data and proof points, the need for manual intervention will diminish, and the autonomous supply chain will be increasingly realized.

How EY can help

EY's strategic supply chain services specialize in gaining organizational alignment on objectives and driving supply chain transformation initiatives. By first working through existing challenges and incorporating the highest value opportunities, EY will develop transformational roadmaps that will expand your organization's service offering and position it for future growth.

How Blue Yonder can help

Blue Yonder is the recognized leader in the supply chain landscape and is uniquely positioned to deliver all critical aspects of the digital supply chain, from visibility to orchestration to machine learning. Our commitment to a SaaS-native digital landscape and open platform will enable you to begin your transformation, scaling aggressively to exploit the opportunities that digital disruption offers.

Vivek Chhaochharia
Managing Director | +1 214 505 2851
Vivek.Chhaochharia@ey.com

Vikram Gupta
Senior Manager | +1 469 426 4428
Vikram.Gupta@ey.com

Vikram Sriram
Manager | +1 610 322 0377
Vikram.sriram@ey.com

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