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Opinion: The ABCs of Emerging Transport Technologies

Emerging technologies are reshaping the very nature of how we transport goods, and offer the ability to provide agile services that meet the increasing demands of the supply chain and, ultimately, help improve companies' bottom lines.

The ABCs of these emerging technologies are: A for artificial intelligence (AI) and application program interfaces (API); B for blockchain and C for cloud computing.

With AI technology, machines learn to solve problems, completely changing computer applications. Already, it is used in weight and inspection programs to improve the selection of which freight to inspect on the dock.

APIs, in simple terms, allow one piece of software to interact with another. The power of AI, combined with the connectivity of APIs, will allow the trucking industry to price freight services dynamically, creating a freight pricing model similar to what already exists in the passenger airline and hospitality industries.

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We have long wanted to transition from fixed, pre-negotiated and unchanging complex rate agreements to a pricing model that can strategically improve the business. AI will give trucking access to intelligence to generate that pricing dynamically, and APIs will allow us to communicate them to our shippers.

Blockchain is a shared digital ledger system that creates a secure, permanent record of transactions. This technology can help prevent fraud and reduce disputes and potentially recover billions of dollars lost to coordination costs in the shipping industry, according to a recent report.

Blockchain can eliminate corrupted or insecure data by time-stamping each transaction and each piece of data with unalterable, secure identities to verify accuracy.

Dynamically calculated freight rates will be recorded to the ledger, reducing or eliminating rate disputes. And self-executing payments will be part of smart contracts, paying carriers as soon as a proof of delivery is obtained.

Cloud computing gives application developers access to significantly higher-powered servers than they would have with traditional, on-premise hardware. Applications have taken advantage of this computing power to perform more complex calculations and more advanced analytics. As a result, more functional applications are available for integration into freight management systems.

In practice, if an application needs a mileage calculated, we can call the mileage API. If the application needs a rate processed, call the rating API. And if the application requires a weather report to predict truck delays, we call the weather API. By calling other applications rather than

building new solutions from scratch, we improve the timelines and better manage the costs of that work.

Don't Overlook These Technologies

AI and APIs, blockchain and the cloud may be the stars of today's technology in transport, logistics and supply chains. However, other technologies, such as Radio Frequency Identification (RFID), virtual reality (VR) and ever-improving mobile speeds (5G) are playing a big role, too.

RFID, now the industry standard, is becoming the best means of identifying shipments, greatly altering warehouse operations and automated manifesting, assuring accurate notification of trailer arrivals and departures, and vastly improving carriers' abilities to make changes on the fly.

Mobile phones are already starting to offer high-speed 5G technology, more voice recognition and better range.

Video also will become more prevalent. Greatly increased bandwidth will make it easy to upload the video feeds while AI automatically detects items of interest. VR can change the way we train staff, allowing them to get instructions fed to them as they perform complex operations.

As these technological changes continue to occur at a rapid rate, everyone in the supply chain will benefit, from carriers and shippers to distributors, retailers and end-users. Hubs will transfer freight from one carrier to another, much like passengers changing planes at Hartsfield-Jackson Atlanta or O'Hare International Airport terminals. Freight will be redirected and optimized continuously, and the name of the game will be freight flow, not shipments.

These technologies will reshape the future of the transportation industry. Among the most important results will be more profits, controlled costs and reliable, accurate service.

Carrier Logistics Inc., based in Tarrytown, N.Y., is a transportation systems and engineering consulting company that develops technology systems for the trucking industry.