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Future Disruptions in Transportation— 2014 and Beyond

BY ANDREW SCHMAHL

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The transportation sector underwent some exciting changes in 2013. The airline industry further consolidated with the completion of the American Airlines/US Airways merger, airports in North America improved the passenger experience through automated border-clearance kiosks, and companies in the trucking sector experimented with alternative fuels, such as compressed natural gas instead of diesel. (Moreover, if Jeff Bezos is to be believed, Amazon will soon dominate home delivery through the deployment of a fleet of flying parcel drones!) No doubt, then, exciting things are in store for 2014 and beyond.

Based on our conversations with transportation company executives, we find that many are wrestling with the immense changes that technology is bringing to the sector—including both threats and opportunities. These leaders understand that their legacy go-to-market strategies and operating models will need to be upgraded if they are to meet evolving customer needs. More specifically, three topics come up repeatedly in these conversations, presenting the biggest potential disruptions for road, rail, and air transportation players:

1. Near term: same-day delivery
2. Medium term: 3D printing
3. Long term: autonomous commercial vehicles

1. Same-day delivery. E-retailers currently spend a lot of time agonizing over the concept of same-day delivery. They seem to view this service offering as an opportunity to differentiate themselves in an increasingly crowded marketplace. For example, eBay launched its eBay Now service and acquired the London-based rapid-delivery company Shutl in October 2013. For US\$299/year, Amazon Fresh now offers subscribers same-day service on select items in the Los Angeles, San Francisco, and Seattle areas. And Nordstrom now offers same-day delivery to select zip codes for a \$15 fee. These shifts will have the biggest impact on parcel companies, which will need a strategy to enable retailers to fulfill next-day delivery orders. (For example, parcel companies will need to schedule later pickups and figure out a price for these services.)

However, we don't believe that same-day delivery will disrupt the overall transportation industry significantly—at least not yet. The price points and geographies currently on offer (mostly in large coastal cities, for a sizable premium) do not yet have sufficient appeal to truly change the market. The challenge is that most consumers simply do not need, or even want, items delivered on the same day as their order. Consumers tend to purchase goods online late in the day (60 percent of online purchases are placed after 5 p.m.). In addition, they expect shipping to be free—which is virtually im-

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possible with same-day delivery. The bottom line: Same-day delivery will likely remain a niche offering in a small number of urban markets, but it will not grow beyond that.

Instead, transportation companies should focus their efforts on executing low-cost, next-day delivery, by improving their existing footprint and supply chain. Next-day delivery is fast enough for most customers and most occasions, and—more important—it's in line with their willingness to pay. (In a recent *strategy+business* article, we outlined the case for e-retailers to leverage localized inventory at brick-and-mortar stores to enable low-cost, next-day delivery. See "Same-Day Delivery? Not So Fast," by Curt Mueller, Andrew Schmahl, and Andrew Tipping, *s+b*, Winter 2013.)

2. 3D printing. 3D printing, also known as additive manufacturing, is a process in which thin layers of material are laid down in succession to ultimately form a solid object. Some analysts have theorized that this new manufacturing process could fundamentally disrupt product supply chains. In this scenario, centralized manufacturing plants in Asia give way to distributed manufacturing nodes closer to consumption points in North America and Europe.

There are sizable issues to overcome before 3D printing affects the transportation sector, but the technology is advancing rapidly (See "The Skeptic's Guide to 3D Printing," by Tim Laseter and Jeremy Hutchison-Krupat, *s+b*, Winter 2013). The cost of 3D printers is falling fast—some consumer models now cost as little as \$250. And although current printers are able to use only a small set of materials—primarily certain types of plastics—the range is expanding. In fact, scientists claim that 3D-printed human organs are not far off. If that's

true, it's not hard to imagine printers that can use a wider variety of plastics, metals, and other organic material. Finally, the benefits of scale production in low-cost countries are beginning to erode, as wages in those countries rise. The *Wall Street Journal* recently reported that wages for Chinese workers rose 12 percent in 2012 alone.

So although the threat from 3D printing may not be immediate, it is clearly growing, particularly for the air cargo players that handle high-value, urgent products. These companies should understand their exposure, by assessing their highest-volume product segments and comparing those to the categories most ripe for disruption—primarily intermediate or finished goods. In addition, transportation companies need to anticipate the evolving trade-offs that their shipping customers will begin to make between local manufacturing (using 3D printing) and remote manufacturing (using traditional manufacturing processes).

3. Autonomous commercial vehicles. For a few years now, Google has been touting the potential of an autonomous passenger car. Although the possibility is intriguing, beyond the ability to sip your latte while reading the paper on your drive into the office, autonomous cars don't offer much economic value. However, when you consider the wages, safety issues, and manpower shortages associated with long-haul trucking, it's easy to see real economic advantages to autonomous commercial vehicles.

A recent *strategy+business* article outlined many of the advantages and obstacles related to this emerging technology. (See "The Next Autonomous Car Is a Truck," by Peter Conway, *s+b*, Summer 2013.) Consider an autonomous line-haul truck. Not only would a fleet

owner save directly on driver wages, but it would also benefit from potential round-the-clock asset utilization, optimized driving performance, and even, arguably, a safer driving environment. A conservative estimate of these savings comes to \$100,000 per truck per year—or \$1 billion per year for a 10,000-truck fleet.

Further, the technology for autonomous vehicles either exists or is in development, so the biggest obstacles are not economic or technological, but social and legal. Laws would need to be amended, and the public would need to get used to the sight of driverless trucks careening down the highway. Because of these hurdles (in addition to the long OEM product development cycles), autonomous trucks likely will not be on the roadways soon. Nonetheless, truck OEMs and fleet managers should start evaluating this technology to better understand its potential. Likewise, rail and air freight executives must consider how autonomous trucks would alter the relative cost of road, rail, and air freight in the years to come.

These three trends are the main issues currently keeping transportation executives up at night. Although they may not change the transportation sector in 2014, they have great potential to affect it in the coming years. Successful, proactive companies should take steps today to get ahead of these shifts, by planning for the future and understanding where the threats and opportunities lie. +

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